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CH-47C/HLH R AND M SIMULATION ANALYSIS

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Boeing Vertol Company

Prepared for:

Army Air Mobility Research and
Development Laboratory

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Eustis Directorate Position Statement

The Eustis Directorate of the U. S. Army Air Mobility Research and
Development Laboratory is developing a simulation capability for
assessing the systems-level impact of predicted changes in component
reliability and maintainability (R&M) parameters and in proposed
changes to maintenance concepts. A general R&M probabilistic sim-
ulation model is being used to establish this capability. The R&M
simulation model can be used with any aircraft type; e.g., when the
requisite input data for the CH-47C has been defined, the model then
becomes the CH-47C R&M simulation model. The approach used is to
develop a baseline case for a specific aircraft type and then to
simulate an alternative configuration and conduct a comparative
analysis. This Boeing Vertol report documents the baseline develop-
ment for the CH-47C and the developmental Heavy Lift Helicopter.

The conclusions and recommendations contained herein are concurred
in by this directorate. The comparative analysis contained in this
report can be easily replicated or modified for application to other
problem areas. The R&M simulation model used, however, is a complex
tool that requires substantial skill in application and analysis of
results.

The technical monitor of this contract was Mr. Robert L. Walker,
Military Operations Technology Division.

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This report presents the results of a study which develops
and validates CH-47C and HLH (Heavy Lift Helicopter) R&M
(Reliability and Maintainability) simulation models. Integral
to this study is the development of R&M input data, mission
scenarios, and maintenance concepts, representing the CH-47C
and HLH in various types of deployment and maintenance
support.

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Block 20.   Abstract - continued.

The steps taken to perform an analytical validation of the two
models (CH-47C and HLH) are demonstrated.

Documentation and rationale are presented for modifications
made, under this study, to an original Government-furnished
R&M simulation model.

The results of this study are validated R&M simulation models
for the CH-47C and HLH and a comparative analysis of the
simulated ability of the CH-47C and HLH to perform various
missions under several diverse maintenance support plans.

PREFACE

This report presents a study to develop valid CH-47C and 'LH R&M simulation models, conducted under Contract DAAJ02-73-C-0031, Project IF162203A119, for the Eustis Directorate, U.S. Army Air Mobility Research and Development Laboratory (USAAMRDL), Fort Eustis, Virginia.

USAAMRDL technical direction was provided by Mr. R. Walker and Mr. H. Bratt.

The principal investigator and Project Engineer for the Boeing Vertol Company was Mr. J. J. Dougherty,III of Product Assurance Methods and Advanced Applications, who was assisted by Mr. A. J. LoGiurato and Ms. J. Vivaldi of Data Central, and Mr. T. Hammer of Maintainability Engineering. Program management and technical direction were provided by Mr. R. G. Hazlett, Manager, Product Assurance New Business Development.

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Assessment of potential Reliability and Maintainability (R&M)
hardware component research efforts requires an evaluation of
the benefit of the proposed effort. Application of an Army-
developed R&M simulation model to a specific helicopter type
can provide a realistic, timely assessment of research poten-
tial. The approach consists of changing the "component R&M
definitions" or maintenance concepts to reflect the desired
changes, processing the resultant configuration through the
R&M model, and then performing comparative analysis of the
results.

One of the primary reasons for developing a simulation model
is to evaluate operational relationships that are impractical
or impossible to analytically investigate. Many of the prob-
lems which the model is used to solve are related to the
availability/utilization function. The impact that variations
in utilization have upon availability, personnel, spares, and
support equipment usage can best be analyzed by means of
simulation.

Personnel allocations, probability of spares availability,
failure rates, and maintainability rates are entered as input
to the model. Operating under the strictures defined by a
prearranged mission schedule and maintenance philosophy, the
model--by implementation of a Monte Carlo selection routine--
selects certain tasks to be performed to simulate the repair
of randomly occurring failures. Thus, by simulating the main-
tenance occurring over any given time frame, the model gives
its user the ability to analyze his resource allocations. A
flow diagram (Figure 1) presents an overview of how the oper-
ational and maintenance environment is simulated for a company
of aircraft.

To provide a means of R&M assessment, Boeing Vertol has
developed and documented in this study valid R&M simulations
of the CH-47C and the developmental Heavy Lift Helicopter
(HLH). Applicable R&M data was analyzed and transformed into
probabilistic statements for input into the Government-
furnished R&M simulation model. Alternative inspection
schemes were developed and simulated and the results evaluated
in terms of operational and logistics support impact. This
scheme was accomplished by performing the tasks described in
the flow chart in Figure 2.

The result of this study provides CH-47C and HLH models
through which scheduled operations and available maintenance
resources can be used to determine their effect on equipment
availability and maintenance resource usage rate. Various
relationships such as the availability/utilization relation

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may be investigated and optimized in compliance with the constraints inflicted by the resources available and mission designated.
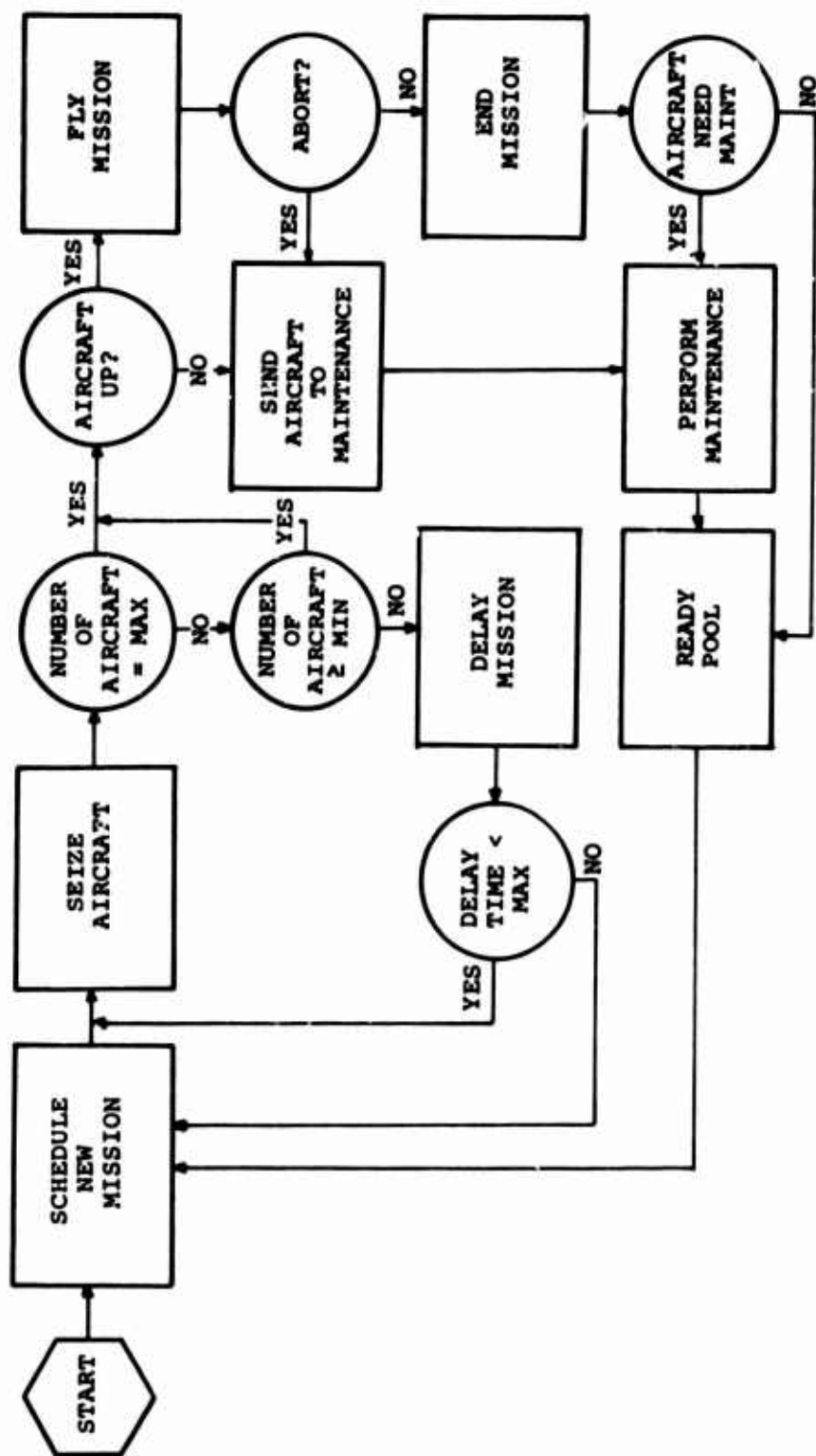

Figure 1. General Helicopter R&M Simulation Flow.

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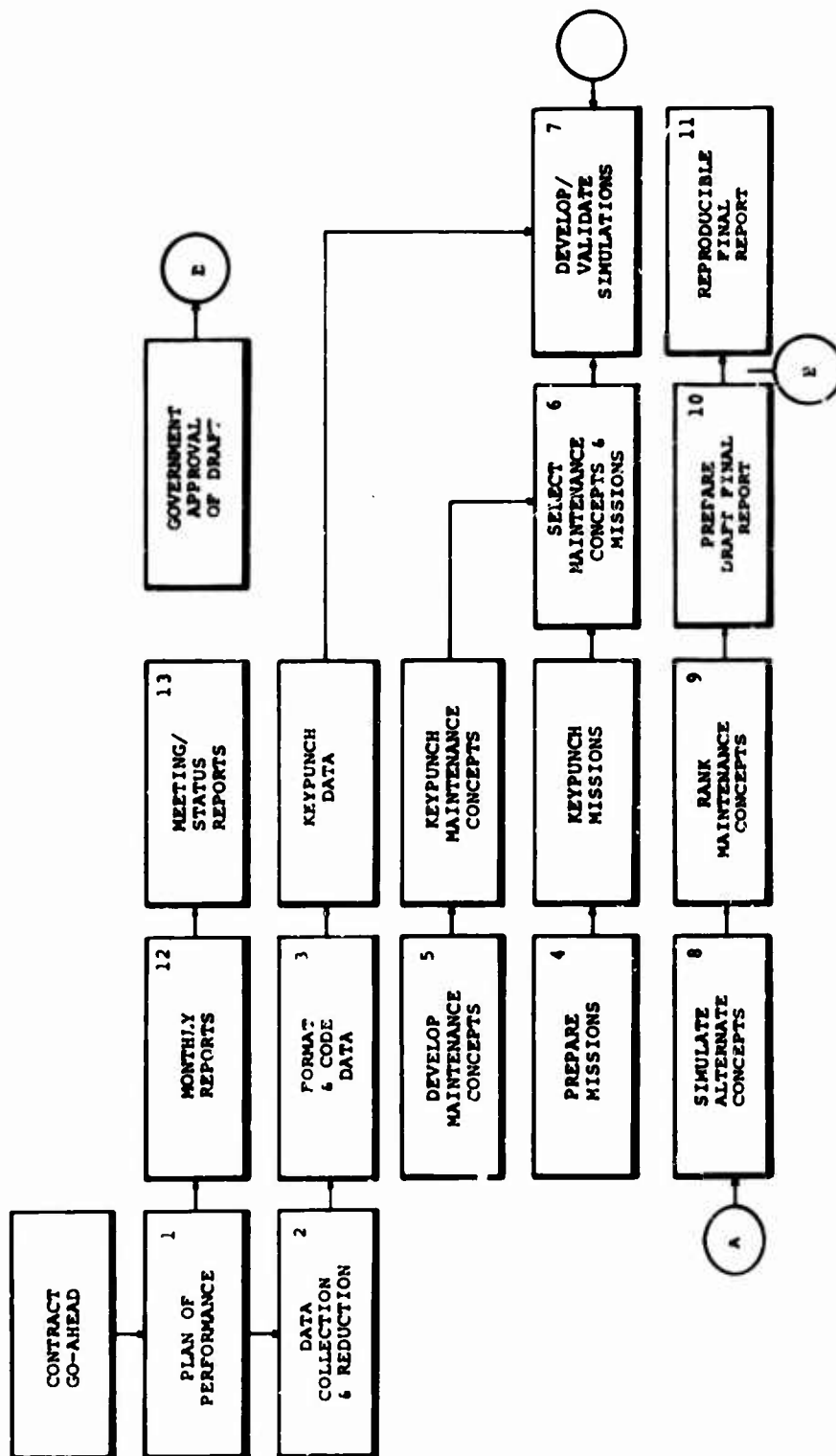
Figure 2. Program Flow Diagram.

BASELINE MODEL DEVELOPMENT

INTRODUCTION

It was the intent of this study to develop validated simulation models for the CH-47C and HLH and employ these models in a maintenance concept comparative analysis to demonstrate model capability for analytical application.

As such, the baseline models have been defined in a sufficiently general manner to allow for the comparative analysis with no logical modifications to the model. Rather, the mission concept and maintenance parameters, unique to the baseline models, are all defined by input data cards.

CH-47C - BASELINE MODEL DEFINITION

The probabilistic and deterministic R&M function tables have been defined for the baseline CH-47C model by direct application of historical data. It is felt that, although this data is a composite generated by aircraft flying rather diverse missions, the distribution of missions flown had a tendency to be centrally located around the baseline mission. Furthermore, the maintenance concept employed in support of the aircraft which generated this data base was, with only minor exceptions, identical to the baseline maintenance concept defined for use in the simulation model. Thus, the baseline model is considered an accurate representation of the actual O&M concept employed on the CH-47C.

CH-47C BASELINE MISSION

The baseline CH-47C mission is a composite developed over hundreds of thousands of flight hours of Chinook application in CONUS, Europe, and Southeast Asia. The expected CH-47C monthly utilization derived from the data generated by this experience is approximately 54 hours per aircraft per month. Furthermore, this data shows an expected Chinook mission length of 1.5 flight hours per mission.

The standard CH-47C company consists of 16 aircraft. For the baseline mission, a delay of up to 30 minutes is acceptable before a mission is scrubbed. Another baseline flight consideration is the requirement that a standby aircraft be maintained in a ready status at all times during the scheduled flying intervals.

Table I is the first page of output from the CH-47C simulation model. It defines the O&M scenario being simulated. Contained in this table are the precise times and number of aircraft relevant to each launch for the baseline mission.

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CH-47C Baseline Maintenance Concept

The nucleus of the CH-47C maintenance concept is the 100-hour PMP. Almost half of all unscheduled maintenance and essentially all scheduled maintenance occur at this inspection. Reference can be made to the subsequent section of this report dealing with R&M Input Data to identify the quantitative basis for this qualitative statement.

The other essential elements of the CH-47C maintenance concept are the 25-hour PMI and daily inspection. When taken in conjunction with the PMP, these inspections account for the detection and correction of almost all unscheduled CH-47C maintenance requirements. The only--and rather obvious-- exceptions to this statement are those failures detected during flight. Those failures, causing downing, but not aborts, are repaired immediately upon mission completion. This is contingent, of course, upon the availability of the necessary maintenance resources.

Table I provides a narrative, established by the simulation model, of the maintenance concept being simulated. The parametric values relevant to the CH-47C baseline maintenance concept are contained in Table II.

The manner in which the parametric entities of the baseline maintenance concept and mission are input to the model is identified in the input data cards displayed in Table III.

TABLE I.   CH-47C R&M SIMULATION MODEL SCENARIO-BASELINE

Scenario Simulated

One platoon of 16 Army helicopters.

Flying program consisted of 7 flying days per week,
with each simulation interval covering an 8-week period.

Mission duration is 1.5 hours with a utilization of 108
hours per aircraft for the 8-week period.

Launch schedule during each flying day

0700	3 aircraft	0830	3 aircraft
1000	3 aircraft	1130	3 aircraft
1300	3 aircraft	1430	3 aircraft
1600	3 aircraft	1730	3 aircraft
1900	3 aircraft		

Other Flight Considerations

Standby aircraft ready at all times during the scheduled
flying intervals.
Mission flight is possible up to 30 minutes after scheduled
flight time. After this interval, flight is scrubbed.

Maintenance Concept Simulated

Periodic maintenance inspections (PMP) occur at intervals
of 100 hours.
Preventive maintenance daily (PMD) inspections occur daily
if the aircraft has flown or every 72 hours if not flying
Maintenance personnel are available between 0600 and 2200
during the 7-day flying period per week.
The aircraft consists of 293 elements. There are 16 time
change components within this total.
An intermediate inspection (PMI) is performed every 25
flight hours.
Organizational maintenance includes an integrated direct
support maintenance capability.
Off equipment component maintenance is performed at the
depot level.

Condemnation or NRTS status is a dummy evaluation.

Basic CH-47C mission and maintenance philosophy.

TABLE II.   BASELINE CH-47 MODEL PARAMETERS

- 16 aircraft per platoon

- 100-hour PMP, requiring 6 men for 7.5 hours each

- 25-hour PMI, requiring 3.5 men for 3.4 hours each

- Daily inspection performed @ 1830 each day requiring 2 men for 2.4 hours each

- TBO values ranging from 300 hours to 2400 hours

- Utilization of 54 hours per aircraft per month

- Maintenance action rate of 1.3 per flight hour

- Flying and maintenance take place 7 days a week

- 2 maintenance shifts of 8 hours each used daily

TABLE III.   BASELINE CH-47C MODEL INPUT CARDS

```
INITIAL     MX1(1,2),185      TIME OF FIRST DAILY- 10THS OF HOURS  00151600
INITIAL     MX1(1,3),240      TIME BETWEEN DAILIES-10THS OF HRS    00151700
INITIAL     MX1(1,4),75       EXT FOR 240 IN 10THS OF HRS          00151800
INITIAL     MX1(1,9),34       EXT FOR 240 IN 10THS                 00151900
INITIAL     MX1(1,10),3       NO. OF DAYS (NON-FLYING) BETWEEN     00152000
                              DAILIES - INPUT IS IN DAYS           00152100
INITIAL     MX1(2,1),40       NUMBER OF MEN BY A.C. FOR PMP-IN10TH 00152200
INITIAL     MX1(3,1),75       EXT FOR MAN A.C. FOR PMP-10THS       00152300
INITIAL     MX1(10,1),35      NO. MEN BY A.C. FOR PMI-10THS        00152400
INITIAL     MX1(11,1),34      EXT FOR MAN BY A.C. FOR PMI -10THS   00152500
INITIAL     MX1(3,2),0        MINIMUM REPAIR TIME -10THS           00152600
INITIAL     X137.14                                                00152700
INITIAL     MX1(3,3),0        P(ORE DELAY)=PARTS/1000 (500=50%)    00152800
INITIAL     MX1(3,5),0        AVG ORE DELAY -10THS                 00152900
INITIAL     MX1(3,4),70000    MAX FLYING HOUR PROGRAM - INTG       00153000
INITIAL     MX1(3,7),0                                             00153100
INITIAL     MX1(3,4),5        TIME TO GET PART FROM STOCK-10THS    00153500
INITIAL     MX1(5,1),6720     SIMULATION INTERVAL -10THS OF HRS    00153600
INITIAL     MX1(5,2),0        UNACCUMULATED MHURS-0) ON IMPACT     00153700
INITIAL     MX1(5,3),0        SIMULATION TURN-OUT MEN UP TO        00153800
INITIAL     MX1(5,4),0        OUTPUT FLIGHT                        00153900
INITIAL     MX1(5,7),0        UNACCUMULATED PMP MHURS              00154000
INITIAL     MX1(4,1),0                                             00154100
INITIAL     MX1(3,10),1       NUMBER OF IS SQUAWKS ALLOWED         00154200
INITIAL     MX3(1,1),40       1ST SHIFT DURATION-10THS             00154300
INITIAL     MX3(2,1),40       2ND SHIFT DURATION-10THS             00154400
INITIAL     MX3(1,4),50       START 1ST SHIFT OFFSET -10THS        00154500
INITIAL     X131.14 NUMBER OF A/C PER COMPANY                      00154600
INITIAL     MM1(1,5),1        LAUNCH # 1 MISSION TYPE-1ST PRIORITY 00154700
INITIAL     MM1(2,5),1        LAUNCH # 2 MISSION TYPE-1ST PRIORITY 00154800
INITIAL     MM1(3,5),1        LAUNCH # 3 MISSION TYPE-1ST PRIORITY 00154900
INITIAL     MM1(4,5),1        LAUNCH # 4 MISSION TYPE-1ST PRIORITY 00155000
INITIAL     MM1(5,5),1        LAUNCH # 5 MISSION TYPE-1ST PRIORITY 00155100
INITIAL     MM1(6,5),1        LAUNCH # 6 MISSION TYPE-1ST PRIORITY 00155200
INITIAL     MM1(7,5),1        LAUNCH # 7 MISSION TYPE-1ST PRIORITY 00155300
INITIAL     MM1(4,5),1        LAUNCH # 8 MISSION TYPE-1ST PRIORITY 00155400
INITIAL     MM1(3,5),1        LAUNCH # 9 MISSION TYPE-1ST PRIORITY 00155500
INITIAL     MM1(1,10),3       LAUNCH # 1 NUMBER A/C  -1ST PRIORITY 00155600
INITIAL     MM1(2,10),3       LAUNCH # 2 NUMBER A/C  -1ST PRIORITY 00155700
INITIAL     MM1(3,10),3       LAUNCH # 3 NUMBER A/C  -1ST PRIORITY 00155800
INITIAL     MM1(4,10),3       LAUNCH # 4 NUMBER A/C  -1ST PRIORITY 00155900
INITIAL     MM1(5,10),3       LAUNCH # 5 NUMBER A/C  -1ST PRIORITY 00156000
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TABLE III. Continued

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INITIAL   441(6,10),3    LAUNCH # 6 NUMBER A/C  -1ST PRIORITY00156100
INITIAL   441(7,10),3    LAUNCH # 7 NUMBER A/C  -1ST PRIORITY00156200
INITIAL   441(8,10),3    LAUNCH # 8 NUMBER A/C  -1ST PRIORITY00156300
INITIAL   441(9,10),3    LAUNCH # 9 NUMBER A/C  -1ST PRIORITY00156400
INITIAL   441(1,11),70   TIME TO BEGIN 1ST LAUNCH PREP.       00156500
                         MINUS 2 CLOCK UNITS.                 00156600
INITIAL   441(2,11),15   TIME BETWEEN THIS LAUNCH & PREVIOUS  00156700
INITIAL   441(3,11),15   TIME BETWEEN THIS LAUNCH & PREVIOUS  00156800
INITIAL   441(4,11),15   TIME BETWEEN THIS LAUNCH & PREVIOUS  00156900
INITIAL   441(5,11),15   TIME BETWEEN THIS LAUNCH & PREVIOUS  00157000
INITIAL   441(6,11),15   TIME BETWEEN THIS LAUNCH & PREVIOUS  00157100
INITIAL   441(7,11),15   TIME BETWEEN THIS LAUNCH & PREVIOUS  00157200
INITIAL   441(8,11),15   TIME BETWEEN THIS LAUNCH & PREVIOUS  00157300
INITIAL   441(9,11),13   TIME BETWEEN THIS LAUNCH & PREVIOUS  00157400
INITIAL   441(1,12),9    NUMBER OF LAUNCHES PER DAY           00157500
INITIAL   441(3,12),0    SLACK TIME MISSION TYPE 1 (10THS)    00157600
INITIAL   441(4,12),0    TOTAL TIME FROM CALL TO LAUNCH-10THS 00157700
INITIAL   441(5,13),0    EMT FOR AIRCREW INSP.-10THS          00157800
INITIAL   441(7,15),0    LAUNCH TIME TO REPLACE ABORTS-10THS  00157900
INITIAL   441(1,17),999  PERCENT IN-FLT ABORTS REPLACED/1000  00158000
INITIAL   441(1,18),1    NO.STANDBY A/C BY MISSION TYPE       00158100
INITIAL   441(1,19),7    FLT DURATION FOR ABORT REPLACEMENTS  00158200
INITIAL   441(1,19),2    NO. PRELAUNCH EVENTS BY MISSION TYPE 00158300
INITIAL   441(1,21),5    TIME LAUNCH WINDOW STAYS OPEN        00158400
INITIAL   445(25,1),2400 TBD INTERVAL IN HRS-ITEM # 1         00158500
INITIAL   445(25,2),1400 TBD INTERVAL IN HRS-ITEM # 2         00158600
INITIAL   445(25,3),2400 TBD INTERVAL IN HRS-ITEM # 3         00158700
INITIAL   445(25,4),1200 TBD INTERVAL IN HRS-ITEM # 4         00158800
INITIAL   445(25,5),1200 TBD INTERVAL IN HRS-ITEM # 5         00158900
INITIAL   445(25,6),1200 TBD INTERVAL IN HRS-ITEM # 6         00159000
INITIAL   445(25,7),1200 TBD INTERVAL IN HRS-ITEM # 7         00159100
INITIAL   445(25,8),1200 TBD INTERVAL IN HRS-ITEM # 8         00159200
INITIAL   445(25,9),2400 TBD INTERVAL IN HRS-ITEM # 9         00159300
INITIAL   445(25,10),2400 TBD INTERVAL IN HRS-ITEM # 10       00159400
INITIAL   445(25,11),1200 TBD INTERVAL IN HRS-ITEM # 11       00159500
INITIAL   445(25,12),1200 TBD INTERVAL IN HRS-ITEM # 12       00159600
INITIAL   445(25,13),1200 TBD INTERVAL IN HRS-ITEM # 13       00159700
INITIAL   445(25,14),1200 TBD INTERVAL IN HRS-ITEM # 14       00159800
INITIAL   445(25,15),300  TBD INTERVAL IN HRS-ITEM # 15       00159900
INITIAL   445(25,16),300  TBD INTERVAL IN HRS-ITEM # 16       00160000
INITIAL   445(25,17),30300 TBD INTERVAL IN HRS-ITEM # 17      00160100
INITIAL   445(25,18),30300 TBD INTERVAL IN HRS-ITEM # 18      00160200
INITIAL   445(27,1),0317  TBD ITEM-ELEMENT # 1                00160300
INITIAL   445(27,2),0325  TBD ITEM-ELEMENT # 2                00160400
INITIAL   445(27,3),0329  TBD ITEM-ELEMENT # 3                00160500
INITIAL   445(27,4),0333  TBD ITEM-ELEMENT # 4                00160600
INITIAL   445(27,5),0335  TBD ITEM-ELEMENT # 5                00160700
INITIAL   445(27,6),0337  TBD ITEM-ELEMENT # 6                00160800
INITIAL   445(27,7),0333  TBD ITEM-ELEMENT # 7                00160900
INITIAL   445(27,8),0341  TBD ITEM-ELEMENT # 8                00161000
INITIAL   445(27,9),0343  TBD ITEM-ELEMENT # 9                00161100
INITIAL   445(27,10),0337 TBD ITEM-ELEMENT # 10               00161200
```

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TABLE III. Continued

```
     INITIAL    MAS(37,11),0951    TRD ITEM-ELEMENT # 11              00161300
     INITIAL    MAS(37,12),0952    TRD ITEM-ELEMENT # 12              00161400
     INITIAL    MAS(37,13),0956    TRD ITEM-ELEMENT # 13              00161500
     INITIAL    MAS(37,14),0930    TRD ITEM-ELEMENT # 14              00161600
     INITIAL    MAS(37,15),1127    TRD ITEM-ELEMENT # 15              00161700
     INITIAL    MAS(37,16),1131    TRD ITEM-ELEMENT # 16              00161800
     INITIAL    MAS(37,17),1130    TRD ITEM-ELEMENT # 17- DUMMY       00161900
     INITIAL    MAS(37,18),1150    TRD ITEM-ELEMENT # 18- DUMMY       00162000
     INITIAL    MAI(4,17),1440     DURATION OF FLYING INTERVAL        00162100
     INITIAL    MAS(5,2),160       SHIFT TEAM,CONTROL ON TIME # 2 ON  00162200
     INITIAL    MAS(5,3),40        SHIFT TEAM,CONTROL ON TIME # 2 OFF 00162300
     INITIAL    MAS(5,0),50        SHIFT # 2 OFFSET                   00162400
     INITIAL    MAI(5,3),1         SIMULATE FACTOR                    00162500
     INITIAL    MAS(1,0)-58        SHIFT # 1 OFFSET MINUS 2 C.H.S     00162600
     INITIAL    MAI(2,12),50       TIME BETWEEN LAST CALL & MIDNIGHT  00162700
     INITIAL    MAS(39,1),5        REMOVED ELEMENT DISP(maCOND..6=DVM)00162800
     INITIAL    MAS(19,1),5         REMOVED ELEMENT DISP(maCOND..6=DVM)00162900
     INITIAL    MAS(39,2),6        REMOVED ELEMENT DISP(maCOND..6=DVM)00163000
     INITIAL    MAS(39,3),6        REMOVED ELEMENT DISP(maCOND..6=DVM)00163100
     INITIAL    MAS(39,4),5        REMOVED ELEMENT DISP(maCOND..6=DVM)00163200
     INITIAL    MAS(39,5),6        REMOVED ELEMENT DISP(maCOND..6=DVM)00163300
     INITIAL    MAS(39,6),6        REMOVED ELEMENT DISP(maCOND..6=DVM)00163400
     INITIAL    MAS(39,7),6        REMOVED ELEMENT DISP(maCOND..6=DVM)00163500
     INITIAL    MAS(39,9),6        REMOVED ELEMENT DISP(maCOND..6=DVM)00163600
     INITIAL    MAS(39,9),5        REMOVED ELEMENT DISP(maCOND..6=DVM)00163700
     INITIAL    MAS(39,10),5       REMOVED ELEMENT DISP(maCOND..6=DVM)00163900
     INITIAL    MAS(39,11),5       REMOVED ELEMENT DISP(maCOND..6=DVM)00163900
     INITIAL    MAS(39,12),5       REMOVED ELEMENT DISP(maCOND..6=DVM)00164000
     INITIAL    MAS(39,13),5       REMOVED ELEMENT DISP(maCOND..6=DVM)00164100
     INITIAL    MAS(39,14),5       REMOVED ELEMENT DISP(maCOND..6=DVM)00164200
     INITIAL    MAS(39,15),5       REMOVED ELEMENT DISP(maCOND..6=DVM)00164300
     INITIAL    MAS(39,16),5       REMOVED ELEMENT DISP(maCOND..6=DVM)00164400
     INITIAL    MAS(39,17),5       REMOVED ELEMENT DISP(maCOND..6=DVM)00164500
     INITIAL    MAS(39,18),5       REMOVED ELEMENT DISP(maCOND..6=DVM)00164600
     INITIAL    M475,1556          DUMMY                              00164700
     INITIAL    M149,1000          PMD INTERVAL -10THS                00164900
     INITIAL    M123,7     NO. OF MIN--PACING HOURS/WEEK -10THS       00164900
  *  M103 IS USED TO FLAG OFF SHIFT (=WEEKEND)SCHEDULES=1.E.-M193=480 00165000
  *  MEANS (WEEKEND)S OFF. IT IS NOT USED TO FLAG EVENINGS OFF        00165100
     INITIAL    M134,0             DUMMY - NO OVERTIME      CH-07     00165200
     INITIAL    M199,250  NO.HOURS BETWEEN PMD-S                      00165300
     INITIAL    M132,7  NO. OF WORKING DAYS/WEEK                      00165400
     INITIAL    M135,30000         DAYS BETWEEN PMD-S                 00165410
     INITIAL    M134,30            # DAYS PMD =WINDOW IS OPEN         00165420
```

HLH - Baseline Model Definition

All R&M input parameters employed in the definition of the HLH
model have been developed extraneous to this study by Boeing
Vertol Reliability and Maintainability Engineering Analyses.
In all these analyses, the baseline mission and maintenance
concept were held constant (and identical to those subse-
quently employed in the simulation model development).
Described by prudent synthesis of analytical evaluation and
engineering judgement, the baseline HLH model is the most
accurate representation of the realistic application of the
aircraft available.

HLH Baseline Mission

It is anticipated that a standard HLH company will contain 9
aircraft. These aircraft will each fly approximately 50 hours
per month, primarily composed of 2.0-hour missions.

Again, as was the case for the CH-47C baseline model, a
standby aircraft is required at all times during scheduled
flying operations.

Table IV, the first page of output of the HLH simulation
model, defines the unique call times and numbers of aircraft
per launch for the baseline HLH model.

HLH Baseline Maintenance Concept

The HLH maintenance concept is centered upon a 600-hour,
periodic inspection divided into 12 autonomous, 50-hour
phases. In reality, each of these phases, with only minor
overlap for inspecting safety of flight items, will inspect
distinct sections of the aircraft. The aircraft has been
partitioned (with respect to maintenance) into 12 segments,
each of which requires approximately the same amount of look-
phase inspection time.

Theoretically, the components located in the aircraft parti-
tion being inspected during any phase of the PMP should have
a higher probability of maintenance than those not being in-
spected. However, due to a practical limitation of the model,
this area has been intentionally biased. That is, at each
inspection phase, the same relative probability of detection
distribution has been employed. It is felt, however, that
this bias is minimal, considering the number of PMP's being
performed per simulation and the size of the random variation
in detected elements generated by each simulation run.

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TABLE IV. HLH BASELINE MAINTENANCE CONCEPT

Scenario Simulated

One platoon of nine Army helicopters

Flying program consisted of 7 flying days per week,
with each simulation interval covering an 8-week period.

Mission duration is 2.0 hours with a utilization of
100 mission flying hours per aircraft for the 8-week period.

0700	2 Aircraft
1000	1 aircraft
1300	3 aircraft
1400	1 aircraft
1900	2 aircraft

Other Flight Considerations

Standby aircraft ready at all times during the scheduled
flying intervals.
Mission flight is possible up to 30 minutes after scheduled
flight time. After this interval, flight is scrubbed.

Maintenance Concept Simulated

Phased periodic maintenance inspections occur at twelve
intervals of 50 hours.
Preventive maintenance periodic (PMP) inspection is com-
pieted at 600-hour intervals.
FIRM inspections occur daily if the aircraft has flown
or every 72 hours if not flying.
Maintenance personnel are available between 0600 and 2200
during the 7-day flying period per week.
The aircraft consists of 182 elements. There are no time
change components within this total.
A 10-hour inspection is performed every 10 flight hours
Organizational maintenance includes an integrated direct
support maintenance capability.
Off equipment component maintenance is performed at the
depot level.

Condemnation or NRTS status is a dummy.

Evaluation

Basic HLH mission and maintenance philosophy.

The other elements of the HLH maintenance concept are a 10-hour inspection and a firm (daily) inspection.

Table V identifies the parametric values employed in the baseline HLH maintenance concept.

Figure 3 shows the logical interaction of the elements of the baseline HLH model, and quantifies some of the significant O&M parameters.

Evaluation of Government Furnished R&M Simulation Model

The Government-furnished R&M simulation model provided Boeing Vertol to use in this analysis was defined upon a UH-1N aircraft and Army operational procedures. The model is written in GPSS and requires approximately 300,000 bytes of CPU core, and 5 minutes of CPU time to execute. Originally, the model was logically too tight for general application. That is, the model was so dependent upon the R&M characteristics and mission scenario cf the UH-1 helicopter, that it required significant modification in order that it could be applied in the manner required. The critical areas requiring modification were, (1) generalization of mission length application, (2) generalization of PMP/PMI decision, (3) activation of NORS logic, (4) accountability of NORS downtime, (5) expansion of PMI logic, and (6) an increase in the number of aircraft/company the model can accommodate.

Forty-three blocks of logic were added to the original twelve hundred and forty blocks. Twenty blocks of logic were modified. Approximately three hundred cards were added to the output editor. Several new variables were defined. Approximately three hundred savevalues were modified. The one hundred seventy three variable statements were labeled and the initial cards used in the CH-47 and HLH models were labeled.

It is felt that these generalizations to the model enabled Boeing Vertol to accomplish the contractually required comparative analyses in a more timely manner than would have been possible employing the original model without modification.

Appendix VI presents a detailed identification of the modifications made to the original Government-furnished R&M simulation model. These changes, taken in conjunction with the documentation of the original UH-1 model in Army Technical

Report 73-75, constitute the total documentation package for the CH-47C and HLH baseline R&M simulation model.

TABLE V.   BASELINE HLH MODEL PARAMETERS

- 9 aircraft per platoon

- 50-hour phased PMP, requiring 2.5 men for 8.0 hours

- 10-hour inspection, requiring 2.5 men for 4.0 hours

- Firm inspection performed at 2100 each day requiring 2 men for 0.3 hour each

- All components operate on-condition

- Utilization of 50 hours per aircraft per month

- Basic mission length of 2.0 flight hours

- Maintenance action rate of 1.05 per flight hour

- Flying and maintenance take place 7 days a week

- 2 maintenance shifts of 8 hours each are used each day
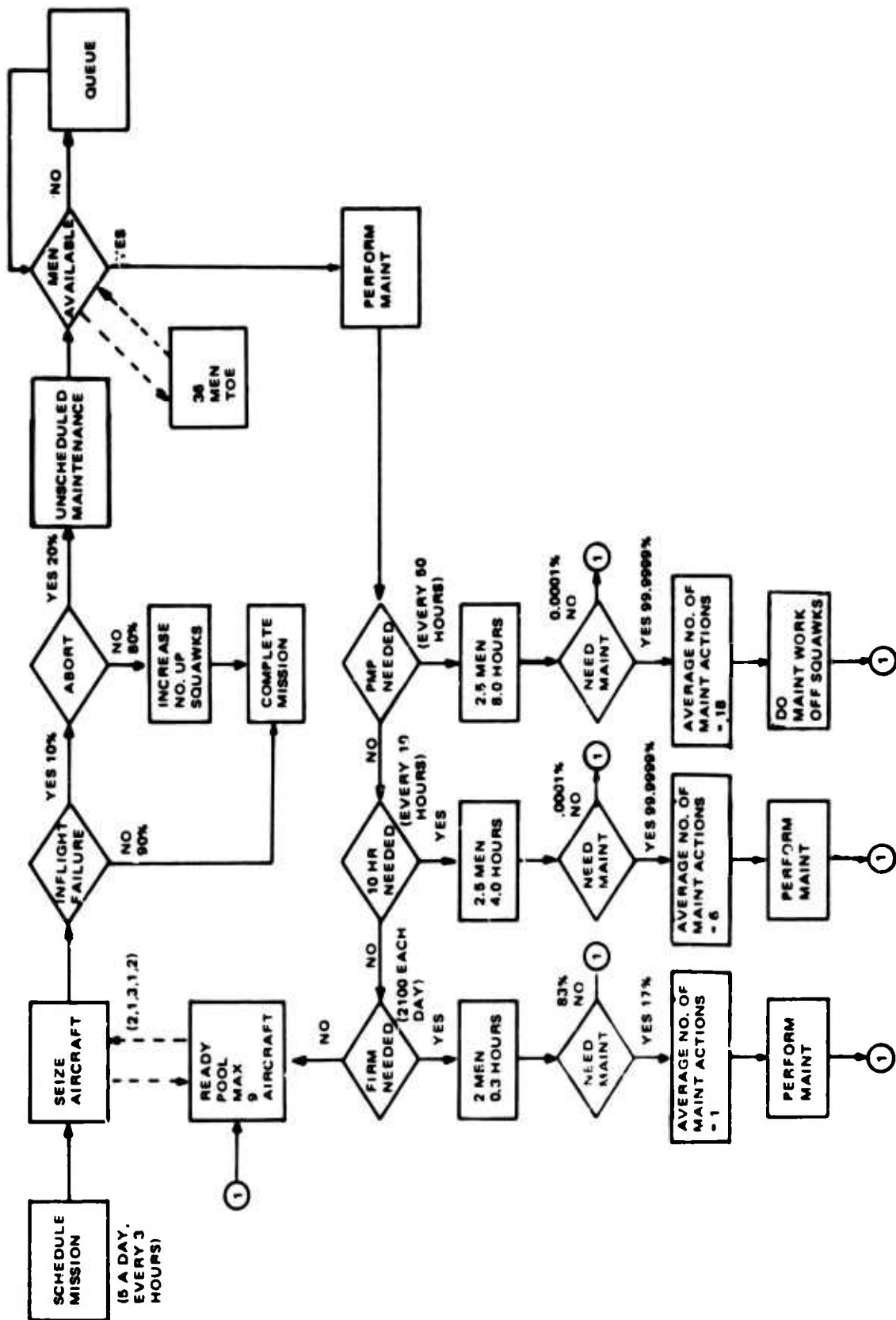
Figure 3. HLH Baseline Overview.

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R&M INPUT DATA

INTRODUCTION

In order that the data collection and analysis task would not dominate the total engineering effort, this study was intended to make maximum use of available CH-47C and HLH R&M data. All basic R&M data elements such as maintenance action rates, mean times to repair, and crew sizes have been extracted from Vertol-developed and -maintained data banks. It has been assumed that all R&M data elements, extracted from the data banks and transformed into a format compatible with the model requirements, are quantitatively and qualitatively valid.

DATA SOURCES

CH-47C

R&M data inputs for the CH-47C have been extracted from the Boeing-Vertol CH-47C/L11 Reliability and Maintainability Field Experience Summary, based on 4132.2 flight hours at the U.S. Army Aviation Test Board, Fort Rucker, Alabama, between June 1969 and September 1970.

HLH

R&M input data for the HLH have been extracted from Boeing-Vertol Document D301-10004-1, HLH Preliminary Design Objectives for the subsystems not covered by the HLH Advanced Technology Components (ATC) contract. For the subsystems covered by the HLH ATC contract, the R&M input data have been extracted from the individual, elemental Maintenance Engineering Analyses (MEA's) performed by Boeing-Vertol maintainability engineering under the HLH ATC contract.

CH-47C R&M DATA

The basic R&M data used to develop the majority of functional and probabilistic inputs to the CH-47C model are contained in Appendix IV. It is felt that these data elements and their relationship to the model function table requirements are straightforward, not requiring any detailed discussion. This section discusses those input data elements which were developed analytically or through engineering judgement and, as such, warrant greater consideration. The function tables falling into this category are functions 2, 10, 12, 14, and 55.

Function 2 - The event probabilities of success coded in this table are based upon an analysis of the previously mentioned CH-47/L11 R&M field experience summary.

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This evaluation showed that for the PMI and PMP inspections, there was virtually no probability of successfully performing the ground event; therefore, for the PMI and PMP events, numbers 8 and 17, respectively, in function Table 2, a value of .000001 has been coded.

This data analysis showed that, essentially, all daily inspections resulted in unscheduled maintenance actions. However, the data showed that the mean time between daily inspections is 6.7 flight hours. Further analysis shows the average utilization per aircraft per day is 3.5 hours. Thus the average number of days between dailies based on historical data for the CH-47C is estimated as 1.9 days. The model, as presently constructed, generally distributes use uniformly over each aircraft per company, rather than using one aircraft per day, which is, according to current CH-47C data, presently being employed. Therefore, a probability of detection of 1/1.9 has been employed as the best estimate of daily inspection probability of failure. Thus for the daily inspection events, number 16 in function Table 2, a value of .500000 has been coded.

Function 10 - This function table contains the cumulative distribution function (CDF) for the number of maintenance actions detected in flight, given that at least one maintenance action has been detected in flight.

Quantitative data is not available for defining a table of this type; thus the distribution has been defined based on engineering judgement. The expected number of maintenance actions detected in flight, conditional upon the detection of at least one maintenance action is, 1.1 maintenance action for the mission length of 1.5 hours.

Function 12 - This function table contains the CDF for the occurrence of multiple maintenance actions at the daily inspection. In 615 daily inspections contained in the CH-47C data base, a total of 1913 maintenance actions were detected. This yields an expected number of maintenance actions of 3.1 per inspection. The manner in which these maintenance actions were distributed for the simulation analysis is shown in Figure 4.
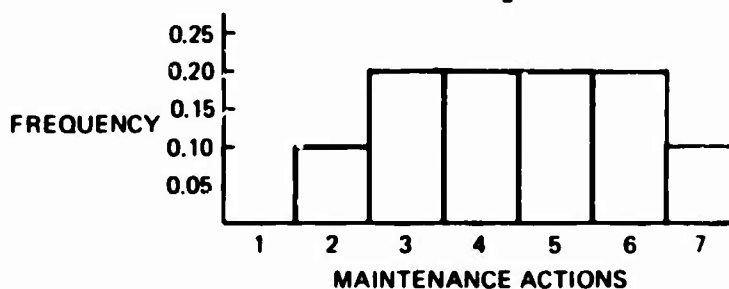
Figure 4. CH-47C Daily Maintenance Action Distribution.

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Function 14 - Contained in this table is the <u>cumulative dis-tribution function for the number of maintenance actions detected at a PMP</u>, given that at least one maintenance action has been detected at the PMP. An analysis of 41 PMP's contained in the CH-47C data base identified 2767 maintenance actions; thus the expected number of maintenance actions per failed PMP is 67.5. The values contained in this table have been derived by assuming that the distribution underlying the number of maintenance actions per failed PMP is the normal distribution with mean $\bar{X}$ equal to 67.5 and standard deviation S equal to $\bar{X}/6$ or 11.3.

Function 56 - This table contains the cumulative distribution function for <u>the number of maintenance actions at a PMI</u>, given that at least one maintenance action has been detected at the PMI. An expected number of maintenance actions per PMI of 6.7 has been estimated, based upon the 167 PMI's contained in the data and their resultant 1127 maintenance actions. Again, as in the case of the PMP a normal distribution with mean $(\bar{X})$ equal to 6.7 and standard deviation (S) equal to $\bar{X}/6$ or 1.1 is employed.

HLH R&M Data

Appendix V contains the basic R&M data inputs employed to develop the HLH model. As was the case for the CH-47C, the transition from predicted R&M data into function tables is basically straightforward enough to require no further discussion. However, the development of tables 2, 10, 12, 14, and 55 for the HLH, where no data was available, required definition and implementation of a mathematical model for estimating functional data elements.

A brief derivation of a math model which can be used for this purpose follows. The fundamental assumption of this model is that the number of maintenance actions detected at any inspection is positively correlated to the amount of time spent in look-phase maintenance at that event.

Assume that three inspections exist at which maintenance can be detected for a certain aircraft.

Further assume that for each of these three inspections, a known time between occurrence (f_i), crew size (C_i), and EMT (EMT_i) exists.

Now, establish an interval of arbitrary length (L), such that each inspection can be expected to occur an integral number of times.

Then, the expected number of maintenance actions per each occurrence of inspection i can be estimated as

$$\left(\begin{array}{c} \# \text{ MA'S} \\ @ \text{ inspection} \end{array}\right)_i = \frac{(C_i)(EMT_i)}{\sum\limits_{J=1}^{3} \frac{(C_j)(EMT_j)}{(f_j)} \ (MTBMA)}$$

It is recommended that the previous equation be modified for most applications to include a deferral factor (d_i). Thus, the equation becomes

$$\left(\begin{array}{c} \# \text{ MA'S} \\ @ \text{ inspection} \end{array}\right)_i = \frac{(C_i)(EMT_i)(d_i)}{\sum\limits_{J=1}^{3} \frac{(d_j)(C_j)(EMT_j)}{(f_j)} \ (MTBMA)}$$

where the d_i values are chosen in such a manner that the MTBMA is held constant over interval L.

Now, assume that the number of maintenance actions at inspection i is Poisson distributed with mean equal to the

$$\left(\begin{array}{c} \# \text{ MA'S} \\ @ \text{ inspection} \end{array}\right)_i$$

One can now use a Poisson table to calculate the probability of exactly 0, 1, 2, 3, ..., N, ..., ∞ maintenance action, simultaneously occurring at inspection i.

The probability associated with 0 maintenance actions is one input required by the model - viz - event probability of success, contained in function 2.

In order to calculate the conditional distribution of maintenance actions per failed event, merely divide the probabilities associated with each number of maintenance actions by (1-event P (success)).

Do this for each of the i inspections. Thus, both types of probabilistic functions required by the model are developed.

To emphasize this technique, consider its application to the HLH, where the following data has been employed.

Event No.	Event Name	Time Between Occurrences	Crew Size	EMT	Deferral Factor
1	firm	2 hours	2	0.3	0.5
2	10-hour	10 hours	2.5	4.0	0.5
3	phased PMP	50 hours	2.5	8.0	1.0

This data, when taken with the total aircraft MTBMA (Mean Time Between Maintenance Actions) of 0.95 hour is then used in the math model, yielding the following results.

Event No.(i) Event Name No. Maintenance Actions$_i$/Cycle

1	firm	7.5
2	10-hour	24
3	phased PMP	20

Thus, using the frequency of occurrence of the i inspections and a subjective estimate of the probability of detecting maintenance at each of the i inspections, the following data has been developed for input to the probabilistic function tables.

Event No.(i)	Event Name	L/ f_i	No. Maintenance Actions$_i$ @ Inspection$_i$	Subjective Probability of Maintenance
1	firm	25	1.0	0.3
2	10-hour	4*	6.0	0.999999
3	phased PMP	1	20.0	0.999999

This data is then used to define function tables 2, 12, 14, and 55. Again (as was the case for the CH-47C) the assumption has been made for the PMI and PMP inspections that the number of maintenance actions detected per inspection is normally distributed with mean, $\bar{X}$, equal to the expected number of maintenance actions per inspection, and standard deviation, S, equal to $\bar{X}/6$.

For the daily and inflight conditional expected number of maintenance actions, function tables 10 and 12 respectively, a truncated Poisson distribution has been subjectively defined. The frequency distributions employed in constructing function tables 10, 12, 14 and 55 are shown in Figures 5 through 8.

Coding of the data presented in the succeeding plots in the format required by the function tables is demonstrated in Appendix VI.

*A PMI is not performed concurrently with the PMP, thus only 4 PMI's per cycle (not 5 as would be calculated using the formula) will take place.

90% of HLH inflight
maintenance occurrences
result in 1 maintenance
action. 10% result in
2 maintenance actions
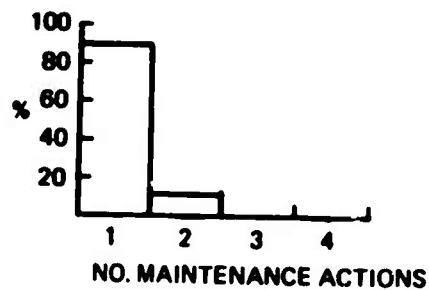
Figure 5.   HLH Inflight Maintenance
            Action Distribution.
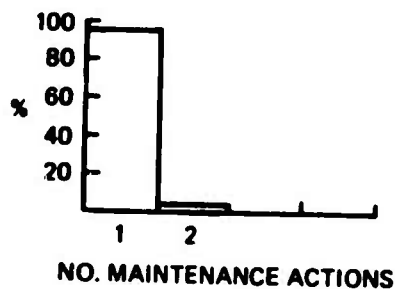
Figure 6.   HLH Firm Maintenance
            Action Distribution.

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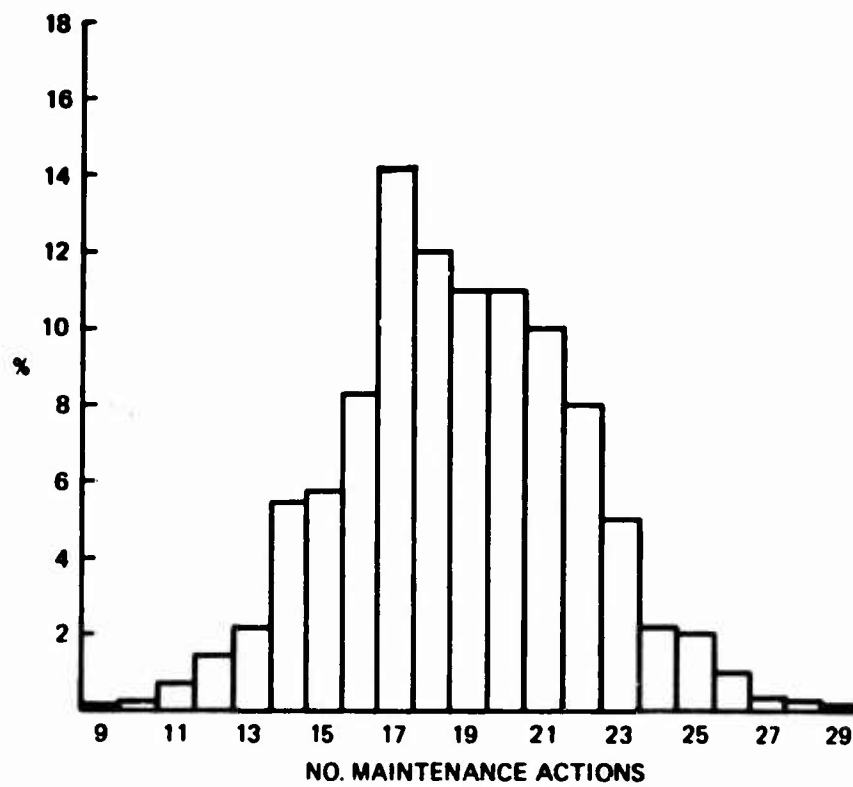
Figure 7. HLH PMP Maintenance Action Distribution.
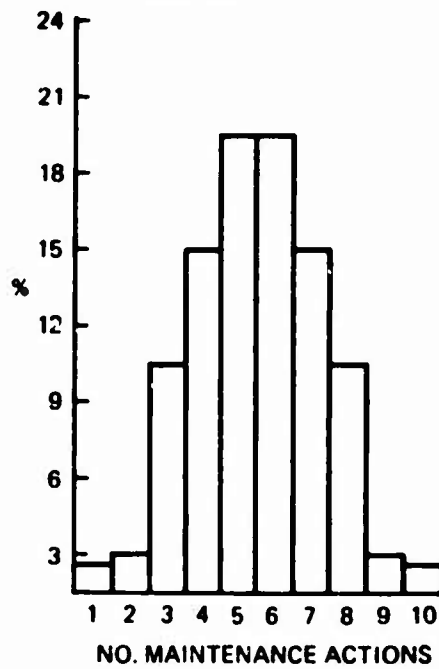
Figure 8. HLH 10-Hour Maintenance Action Distribution.

ALTERNATE MISSION AND MAINTENANCE CONCEPTS

This section identifies the several missions and maintenance concepts defined for the CH-47C and HLH as candidates for simulation in the R&M model. This will demonstrate the suitability of the model for application to typical maintenance analysis.

All missions defined are considered by the airframe manufacturer to be feasible applications of the aircraft being simulated.

All simulated maintenance concepts are based on realistic maintenance applications. As such, the alternate maintenance concepts and missions defined in this section represent a cross section of Operations and Maintenance (O&M) scenarios in which the aircraft could be utilized and maintained.

ALTERNATE MISSION CONCEPTS

CH-47C Missions

The four CH-47C simulated missions shown in Table VI are representative of the aircraft's uses. The following discussion will briefly define each of these four scenarios.

Combat Support (Basic Mission) - This mission is based on Chinook experience in the Republic of Vietnam. An average of 56 hours per aircraft per month is used. Sixteen aircraft are located in one spot. Scheduled missions require 3 aircraft for 1.5 hours per mission, and a standby aircraft is constantly kept ready during the scheduled flying periods.

Logistic Support (Alternate Mission 1) - This mission has been defined to be representative of Chinook application in a sustained surge mission, typical of a relatively high intensity conflict. A full company of sixteen CH-47C aircraft are located and deployed from one location in a resupply mission, generally requiring seven aircraft per mission for 1.5 hours per aircraft.

CONUS Minimum (Alternate Mission 2) - Several peacetime applications of the CH-47C have been combined into a composite CONUS mission. Eleven aircraft are deployed at one location where they perform functions varying from training missions to cargo handling. Each mission duration is 1.5 hours, with one aircraft required per mission.

Fort Rucker Lead-the-Fleet Program (Alternate Mission 3) - In order to provide Time Between Overhaul (TBO) extension data on CH-47C dynamic components, several Chinooks (usually three)

TABLE VI. CH-47C SIMULATED MISSIONS

Combat Support   (Basic Mission)

     Utilization = 56 hours/month/aircraft
                    2 hours/day/aircraft, 7 days a week

     Sixteen aircraft at a location

     One standby aircraft is required

Logistic Support   (Alternate Mission 1)

     Utilization - 168 hours/month/aircraft
                    6 hours/day/aircraft, 7 days a week

     Sixteen aircraft at a location

     Mission length is 1.5 hours and requires 7 aircraft

     No standby required

CONUS Minimum   (Alternate Mission 2)

     Utilization - 30 hours/month/aircraft
                    1.5 hours/day/aircraft, 5 days a week

     Eleven aircraft at a location

     Mission length is 1.5 hours and requires 1 aircraft

     No standby required

Fort Rucker   (Alternate Mission 3)

     Utilization = 100 hours/month/aircraft
                    5.0 hours/day/aircraft, 5 days a week

     Three aircraft at location

     Mission length is 1.5 hours and requires 1 aircraft

     No standby required

have been located at the U.S. Army Aviation Test Board facility at Fort Rucker, Alabama, since 1963. These aircraft have been generally flown more than the rest of the CH-47 fleet.

For this analysis, 100 hours per aircraft per month has been employed. Each mission requires 1.5 hours with one aircraft required per mission. Flights occur 5 days a week rather than 7 days a week, as is the case for all other missions defined herein for the CH-47C.

HLH Missions

The HLH missions shown in Table VII represent four of the possible missions in which a Heavy Lift Helicopter could be employed. The following discussion will identify the pertinent operational characteristics of these areas.

HLH Combat Support Mission

This is the baseline mission for the Heavy Lift Helicopter. Nine aircraft are located in one spot and a utilization of 50 hours per aircraft per month is anticipated. Flying takes place over a 7-day week. Each mission requires between 1 and 3 aircraft and is assumed to take 2 hours. A standby aircraft, required at all times, is kept in an alert status during scheduled flying periods.

HLH Container Unloading

Three Heavy Lift Helicopters are deployed from a single spot (possibly a harbor) where they perform a container unloading mission. Due to the large amounts of cargo to be moved, missions of this type could be expected to place a high utilization requirement on the aircraft. For this analysis, a utilization of 150 hours per aircraft per month has been employed. Each 2-hour mission requires one aircraft and flying occurs 5 days a week.

HLH CONUS Mission

This mission is a composite of several of the CONUS missions in which a Heavy Lift could be employed, ranging from cargo handling to training missions. Nine aircraft will be deployed from one location. Missions, generally requiring three aircraft and taking 2 hours, will take place on a 5-day week basis.

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TABLE VII. HLH SIMULATED MISSION PROFILES

HLH Combat Support Mission   (Basic Mission)

    Utilization = 50 hours/month/aircraft
              1.8 hour/day, 7 days a week

    Nine aircraft at a location

    One standby aircraft is required

HLH Container Unloading   (Alternate Mission 1)

    Utilization = 150 hours/month/aircraft
              7.5 hours/day, 5 days a week

    Three aircraft at a location

    Each mission is 2 hours long and requires only 1 aircraft

    No standby required

HLH CONUS Minimum   (Alternate Mission 2)

    Utilization = 20 hours/month/aircraft
              1 hour/day, 5 days a week

    Nine aircraft at a location

    Each mission is 2 hours long and requires 3 aircraft

    No standby aircraft required

HLH Combat Support Surge Mission   (Alternate Mission 3)

    Utilization - 280 hours/month/aircraft
              10 hours/day, 7 days a week

    Nine aircraft at a location

    Each mission is 5 hours long and requires 3 aircraft

    A standby aircraft is required

HLH Combat Support Surge Mission

One of the more important operational requirements of the Heavy Lift Helicopter is that it can sustain a 300-hour per aircraft per month surge over a 60-day period. This mission would typify a high-intensity conflict where 9 aircraft, located at one spot, will be flying essentially every minute that they are available for flight, 7 days a week. It has been assumed for this analysis that each mission requires 3 aircraft and will take 5 hours. Due to the importance of this mission and the realization that contingencies could arise requiring that an additional aircraft be displaced to some other location, a standby aircraft is required.

ALTERNATE MAINTENANCE CONCEPTS

CH-47C Maintenance Concepts

Five maintenance concepts have been developed for the CH-47C, consisting of the baseline existing CH-47C maintenance concept and four alternative maintenance concepts. The four variations from the original or baseline concept represent significantly different philosophies of scheduled inspection and scheduled maintenance, varying from levels of TBO's for dynamic components to the elimination of all TBO's from the aircraft, that is, operating the aircraft on condition. The following discussion will briefly define each of these five maintenance concepts.

For all runs of the CH-47C comparative analysis, the same Table of Organization and Equipment (TOE Number 1-258H) has been employed. The personnel allocated within this TOE has been aggregated into 7 categories of personnel types for use in the simulation analysis. The quantities of personnel for each of these 7 categories, and the corresponding Army Military Occupation Specification (MOS) designations, are shown below. Two shifts of 8 hours each were used for all runs.

Skill Code	MOS Number	MOS Nomenclature	Shift 1 Quantity	Shift 2 Quantity
01	67UXX	Helicopter Repairman	20	10
02	68GXX	Airframe Repairman	12	6
03	35KXX	Avionics Repairman	3	2

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Skill Code	MOS Number	MOS Nomenclature	Shift 1 Quantity	Shift 2 Quantity
04	35LXX	Avionics Repairman	2	0
05	68FXX	Electrical Repairman	4	2
06	68HXX	Hydraulics Repairman	2	0
07	68EXX	Rotor Repairman	2	0

CH-47C Existing Maintenance Concept

Table VIII identifies scheduled maintenance requirements, inspection requirements, and mission information data on the baseline CH-47C mission. It can be seen from this table that TBO levels vary from 300 hours on the engine to 2400 hours on certain elements of the shaft assembly. The inspection concept calls for the performance of the daily inspection after the last flight of the day or preceding the first flight of the next day, an intermediate inspection performed in 25-hour increments, and a periodic inspection performed every 100 hours. Preflight and postflight inspections are not performed by the maintenance crew and are therefore not chargeable to maintenance. These inspections are merely walkaround safety-of-flight inspections performed by the pilot, copilot, or crew chief before and after flight.

CH-47C Maintenance Concept - Alternate A

This simulated maintenance concept shown in Table IX is based upon the presently considered baseline mission and maintenance concept for the Heavy Lift Helicopter. The scheduled maintenance concept for the aircraft requires all components to be operated on condition. The inspection concept requires: (1) a firm inspection which can be considered analogous to the daily inspections of the CH-47C baseline mission except in terms of duration and content of those things inspected; (2) a 10-hour inspection performed in conjunction with the firm inspection which covers those areas previously considered performed in the daily inspection; and (3), the Phased Periodic Inspection (PPI) which is performed every 50 hours. In performing the various phases of the periodic inspection, the aircraft is divided into six independent areas, all of which require essentially the same elapsed maintenance look-phase time. After six sequential phases of inspection, the total periodic maintenance inspection has been completed. Due to some

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TABLE VIII. BASIC CH-47C MAINTENANCE CONCEPT (BASED ON EXISTING MAINTENANCE POLICY)

A. Scheduled Maintenance

Component	P/N	TBO	Retirement Interval
Forward transmission	114D1200-5	1200	N/A
Aft transmission	114D2200-7	1200	N/A
Engine combining transmission	114D5200-2	1200	N/A
Engine mechanical transmission (2)	114D6200-4	1200	N/A
Aft rotary wing drive shaft	114D3250-1	1800	3600
Sync shaft assembly	All Appl. P/N's	2400	N/A
Sync shaft adapter	114D3243-1	2400	N/A
Sync shaft adapter	114D3067-3	2400	N/A
Engine drive shaft assembly	114D3247-1	2400	N/A
Forward rotary wing head	114R2003-3	1200	N/A
Aft rotary wing head	114R2004-4	1200	N/A
Forward swashplate assembly	114R3508-8	1200	N/A
Aft swashplate assembly	114R3505-11, -12	N/A	N/A
Forward rotor blades (3)	114R1502-33	N/A	6000
Aft rotor blades (3)	114R1502-34	N/A	4000
Engine	T-55-L-11	300	N/A

B. Inspections

Type	Crew & Elapsed Time	When Accomplished	Description	Rationale
(1) Daily	2 men 2.37 hours	After the last flight of the day or preceding the next day's first flight	Consists of visual examination and operational checks to determine that the aircraft can safely and efficiently perform its assigned mission	Scheduled inspections are required in order to assure that latent defects are discovered and corrected before malfunctioning or serious trouble results
(2) Intermediate	3.5 men 3.44 hours	Every 25, 50, and 75 flying hours after completion of the periodic inspection	Provides verification of satisfactory functioning at frequencies between the daily and periodic inspections	Same as daily
(3) Periodic	6 men 7.55 hours	Every 100 flying hours	A comprehensive, thorough, and searching inspection of all items which are subject to adjustment, discrepancies, or failures	Same as daily

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TABLE IX. CH-47C MAINTENANCE CONCEPT - ALTERNATE A (BASED ON PROPOSED HLH MAINTENANCE CONCEPT)

A. Scheduled Maintenance

None - All components are replaced "on condition".

B. Inspections

Type	Crew & Elapsed Time	When Accomplished	Description	Rationale
(1) Flight inspection requirement minimum (firm)	2 men 12 min	After each flying day	Minimum safety of flight inspection which supplants present daily inspection. Only items directly related to safety of flight are considered	Historical CH-47C DATA has shown that many of the items on the daily checklist rarely fail. This inspection would cover only those things critical to safety of flight.
(2) Ten-hour inspection	2.5 men 3.5 hours	Each 10 flight hours in conjunction with the firm	Covers those areas previously included in the conventional daily inspection that are not classified as "flight critical"	Reduced maintenance by extending the inspection interval of non "flight critical" items
(3) Phased Periodic Inspection (PPI)	2.5 men 7 hours for each phase	Progressive phases - every 50 flight hours	The PPI will be divided into 6 phases, each of which will be performed every 50 flight hours. A full inspection will be completed in 300 flight hours, at which time another cycle will be initiated	Improvements in inspection methods and reliability will reduce the need for "look phase" inspection and increase the interval between periodic inspections. This concept permits the aircraft to be removed from flight status for shorter periods of time during anticipated downtime periods, permitting efficient flight scheduling, improved personnel utilization and increased availability. Deferred maintenance accrual is attenuated, if not completely eliminated.

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limitations of the existing form of the R&M simulation model, the application of this maintenance concept is slightly biased; that is, at each phase of the PPI, it is assumed that every item of the aircraft is capable of being observed as a failure, rather than just those items that would be normally covered in that look-phase of the periodic inspection. It is felt, however, that due to the manner in which the six phases of the periodic inspection would be constructed, the bias injected by performing the analysis is minimal. Again, as in the case of the baseline mission, preflight inspections are not chargeable to maintenance.

CH-47C Maintenance Concept - Alternate B

This concept shown in Table X represents an adaptation of the Navy maintenance concept for supporting a CH-46 to an Army CH-47C maintenance concept. Scheduled maintenance of dynamic components consists of TBO levels varying from 1200 hours for transmissions to 2400 hours for the engine and certain elements of the sync-shaft assembly. The inspection concept consists of, (1) a turnaround inspection performed prior to each flight of the day and after the last flight of the day, which is essentially a combination of preflight and postflight inspections, (2) a daily inspection performed prior to the first flight of the day, and (3) a calendar periodic inspection performed at 34-week intervals. The interesting point of differentiation between this concept and the existing maintenance concept is that the periodic inspection is not aircraft-clock oriented, but rather calendar-time oriented. Incorporation of this maintenance concept into the comparative analyses, which will be discussed in detail later, required certain areas of modification to the model to enable evaluation of periodic inspection requirements based on the calendar rather than clock-time orientation.

CH-47C Maintenance Concept - Alternate C

This concept depicted in Table XI represents the adaptation of an Air Force H-3 maintenance concept to an Army CH-47C application. All components are to be replaced on condition; that is, there is no scheduled removal of dynamic components. The inspection concept consists of a preflight inspection, performed prior to each flight of the day, a postflight, performed after each flight of the day, and a phased periodic inspection, performed at 100 flying hour intervals. The major distinction between this alternate maintenance concept and the baseline and other alternate maintenance concepts is the replacement of the daily inspection with the postflight inspection performed after each flight, not just after the last flight of the day.

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TABLE X. CH-47C MAINTENANCE CONCEPT - ALTERNATE B (BASED ON USN CH-46 MAINTENANCE CONCEPT)

A. Scheduled Maintenance

Component	P/N	TBO	Retirement Interval
Forward transmission	114D1200-5	1200	N/A
Aft transmission	114D2200-7	1200	N/A
Engine combining transmission	114D5200-2	1200	N/A
Engine mechanical transmission	114D6200-4	1200	N/A
Aft rotary wing drive shaft	114D3250-1	1800	3600
Sync shaft assembly	All Appl. P/N's	2400	N/A
Sync shaft adapter	114D3243-1	2400	N/A
Sync shaft adapter	114D3067-3	2400	N/A
Engine drive shaft assembly	114D3247-1	2400	N/A
Forward rotary wing head	114R2003-3	1200	N/A
Aft rotary wing head	114R2004-4	1200	N/A
Forward swashplate assembly	114R3508-8	1200	N/A
Aft swashplate assembly	114R3505-11, -12	N/A	N/A
Forward rotor blades	114R1502-33	N/A	600
Aft rotor blades	114R1502-34	N/A	4000
Engine	T-55-L-11	2400	N/A

B. Inspections

Type	Crew & Elapsed Time	When Accomplished	Description	Rationale
(1) Turnaround/ servicing	1 man 20 min	Prior to each flight and after last flight	Primarily a visual inspection to determine obvious defects between flights, degradation that may have occurred during flight and the required servicing	Purpose of the turn-around inspection is to reduce downtime between flights. It contains the minimum requirements to insure the integrity of the aircraft for flight
(2) Daily	2 men 60 min	Prior to the first flight of the day	These requirements are to inspect for latent defects at a greater depth than performed in the turnaround	Purpose is to determine degradation and to insure the aircraft is safe for flight
(3) Calendar-periodic (airframe)	9 men 13 hours	At 34-week intervals	A thorough and detailed inspection of the complete aircraft to inspect for material degradation that may have occurred during the preceding calendar period and to perform essential preventive maintenance	Calendar concept permits more efficient scheduling of aircraft operations and maintenance, thereby improving aircraft availability

TABLE XI. CH-47C MAINTENANCE CONCEPT - ALTERNATE C (BASED ON USAF H-3 MAINTENANCE CONCEPT)

A. Scheduled Maintenance: None - All components are replaced "on condition".

B. Inspections

Type	Crew & Elapsed Time	When Accomplished	Description
(1) Preflight	2 men 30 min	Prior to each flight	Inspection consists of checking the helicopter for flight preparedness by performing visual examination and operational checks of certain components to assure no defects or maladjustments exist that could cause accidents or aborted missions
(2) Postflight	2 men 20 min	After each flight	Inspection consists of checking the helicopter to determine if it is suitable for another flight by performing visual examination of certain components, areas or systems to assure no defects exist which would be detrimental to further flight
(3) Phased inspection	3 men 3.5 hours	Every 100 flying hours	The complete inspection cycle for the weapon system is assumed to be 1200 hours. A portion of the total recurring inspection requirements is accomplished at each phased inspection. Certain inspection requirements are considered basic phase requirements and will be accomplished in conjunction with each phase (100 flying hours) inspection. The inspection cycle will be repeated, starting with phase number one, 100 hours after completion of the 12th phased inspection. Included in each phased inspection are requirements for checking certain components, areas or systems of the helicopter to determine that no condition exists which, if not corrected, could result in failure or malfunction of the component prior to the next scheduled inspection

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CH-47C Maintenance Concept - Alternate D

The final alternate CH-47C maintenance concept shown in Table XII is a modification of a Navy UH1E maintenance concept to an Army CH-47C application. TBO levels on dynamic components range from 2000 hours on the transmissions to 2400 hours on the engines. The inspection concept calls for a preflight inspection before each flight, a postflight after each flight, a daily inspection performed prior to the first flight of the day in conjunction with the preflight, and a calendar periodic inspection performed at 17-week intervals. This inspection concept, therefore, combines various elements of several of the previously defined maintenance concepts.

HLH MAINTENANCE CONCEPT

Each of the five maintenance concepts defined for the heavy-lift helicopter is basically similar to those previously discussed for the CH-47C helicopter. The variations between HLH maintenance concepts and those for the CH-47C are the look-phase maintenance time required to perform the various elemental inspections for the maintenance concepts. Tables XIII through XVII identify the scheduled inspection requirements for the various dynamic components of the HLH aircraft in the various maintenance concepts, and the duration and number of men required to perform the look-phase of the various inspection types. Therefore, rather than duplicate the previous discussion, Table XVIII has been developed to show the correlation between the CH-47C and HLH maintenance concepts. Table XVIII presents a method of utilizing these discussions and relating them to the maintenance concepts depicted in Tables XIII through XVII.

For all runs of the HLH comparative analysis, two 8-hour maintenance shifts have been employed. The personnel allocations for each shift, in terms of quantities and distribution, have been developed by Boeing Vertol Maintainability personnel. The specific personnel quantities by skill code employed in this analysis are shown below.

Skill Code	Comparable Army Maintenance Nomenclature	Shift 1 Quantity	Shift 2 Quantity
01	General Mechanic - Organizational	13	11
02	General Mechanic - Integrated Direct Support	6	6

TABLE XII. CH-47C MAINTENANCE CONCEPT - ALTERNATE D (BASED ON USN UH-1E MAINTENANCE CONCEPT)

A. Scheduled Maintenance

Component	TBO	Retirement Interval
Forward transmission	2000	N/A
Aft transmission	2000	N/A
Engine combining transmission	2000	N/A
Engine mechanical transmission	2000	N/A
Aft rotary wing drive shaft	2000	4000
Sync shaft assembly	2400	N/A
Sync shaft adapter	2400	N/A
Engine drive shaft assembly	2400	N/A
Forward rotary wing head	2000	N/A
Aft rotary wing head	2000	N/A
Forward swashplate assembly	2000	N/A
Aft swashplate assembly	2000	N/A
Forward rotor blades	N/A	6000
Aft rotor blades	N/A	4000
Engine	2400	N/A

B. Inspections

Type	Crew & Elapsed Time	When Accomplished	Description
(1) Preflight	2 men 20 min	Prior to each flight	This inspection is to verify proper servicing and to inspect for obvious defects
(2) Postflight	2 men 20 min	After each flight	This inspection required to determine obvious degradation that may have occurred during flight and required servicing
(3) Daily	2 men 60 min	Prior to the first flight of the day. No more than 72 hours may elapse between such accomplishment and the following flight. The accomplishment of these requirements immediately prior to flight shall satisfy the requirements of a preflight inspection	This inspection required to inspect for latent defects at a greater depth than performed in the preflight and postflight inspection; to determine degradation and to insure the aircraft is safe for flight
(4) Calendar periodic	9 men 10 hours	At 17-week intervals	These requirements are to inspect the aircraft for material degradation that may have occurred during the preceding calendar and to perform essential preventive maintenance

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TABLE XIII. BASIC HLH MAINTENANCE CONCEPT (BASED ON PROPOSED HLH MAINTENANCE CONCEPT)

A. Scheduled Maintenance: None - All components are replaced "on condition".

B. Inspections

Type	Crew & Elapsed Time	When Accomplished	Description	Rationale
(1) Flight Inspection Requirement Minimum (FIRM)	2 men 15 min	After each flying day	Minimum safety-of-flight inspection which supplants present daily inspection. Only items directly related to safety-of-flight are considered	Incorporation of diagnostics and improved reliability eliminates the conventional daily inspection
(2) Ten-hour inspection	2.5 men 4 hours	Each 10 flight hours in conjunction with the FIRM	Covers those areas previously included in the conventional daily inspection that are not classified as "flight critical" for the HLH	Reduce maintenance by extending the inspection interval of non-flight critical items. Anticipated frequency would be every other flying day based on a utilization rate of 4 hours per day
(3) Phased Periodic Inspection (PPI)	2.5 men 8 hours for each phase	Progressive phases every 50 flight hours	The PPI will be divided into 12 phases, each of which will be performed every 50 flight hours. A full inspection cycle will be completed in 600 flight hours, at which time another cycle will be initiated	Significant state-of-the-art attainments affecting reliability and inspection methods will reduce the need for look-phase inspection and will substantially increase the interval between periodic inspections. The advantages in this concept are that the aircraft is removed from flight status for shorter periods of time during anticipated downtime periods, permitting efficient flight scheduling, improved personnel utilization and increased availability. Deferred maintenance accrual is attenuated, if not completely eliminated

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TABLE XIV. HLH MAINTENANCE CONCEPT - ALTERNATE A (BASED ON EXISTING CH-47C MAINTENANCE CONCEPT)

A. Scheduled Maintenance

Component	TBO
Forward rotor transmission	1200
Combining transmission	1200
Aft rotor transmission	1200
Sync shafting (6 sections)	2400
Slant shaft (2 sections)	2400
Engine drive shafts (6 sections)	2400
Forward rotor hub	1200
Aft rotor hub	1200
Forward rotor blades	on condition
Aft rotor blades	on condition
Forward swashplate	1200
Aft swashplate	1200
Engine	500

B. Inspections

Type	Crew & Elapsed Time	When Accomplished	Description	Rationale
(1) Daily	2 men 3.0 hours	After the last flight of the day or preceding the next days flight	Consists of visual examination and operational checks to determine that the aircraft can safely and efficiently perform its assigned mission	Scheduled inspections are required in order to assure that latent defects are discovered and corrected before malfunctioning or serious trouble result
(2) Intermediate	4 men 4 hours	Every 25, 50 and 75 flying hours after completion of the periodic inspection	Provide verification of satisfactory functioning at frequencies between the daily and periodic inspections	Same as daily
(3) Periodic	8 men 8 hours	Every 100 flying hours	A comprehensive, thorough, and searching inspection of all items which are subject to adjustment, discrepancies, or failures	Same as daily

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TABLE XV. HLH MAINTENANCE CONCEPT - ALTERNATE B (BASED ON USN CH-46 MAINTENANCE CONCEPT)

A. Scheduled Maintenance

Component	TBO
Forward rotor transmission	1200
Combining transmission	1200
Aft rotor transmission	1200
Sync shafting (6 sections)	2400
Slant shaft (2 sections)	2400
Engine drive shafts (6 sections)	2400
Forward rotor hub	1200
Aft rotor hub	1200
Forward rotor blades	on condition
Aft rotor blades	on condition
Forward swashplate	1200
Aft swashplate	1200
Engine	2400

B. Inspections

	Type	Crew & Elapsed Time	When Accomplished	Description	Rationale
(1)	Turnaround/ servicing	2 men 15 min	Prior to each flight and after last flight	Primarily, a visual inspection to determine obvious defects between flights, degradation that may have occurred during flight and the required servicing	Purpose of the turnaround inspection is to reduce downtime between flights. It contains the minimum requirements to insure the integrity of the aircraft for flight.
(2)	Daily	2 men 75 min	Prior to the first flight of the day	These requirements are to inspect for latent defects at a greater depth than performed in the turnaround	Purpose is to determine degradation and to insure the aircraft is safe for flight
(3)	Calendar- periodic (airframe)	10 men 15 hours	At 34-week intervals	A thorough and detailed inspection of the complete aircraft to inspect for material degradation that may have occurred during the preceding calendar period and to perform essential preventive maintenance	Calendar concept permits more efficient scheduling of aircraft operations and maintenance, thereby improving aircraft availability

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TABLE XVI. HLH MAINTENANCE CONCEPT - ALTERNATE C (BASED ON USAF H-3 MAINTENANCE CONCEPT)

A. Scheduled Maintenance: None - All components are replaced "on condition".

B. Inspections

Type	Crew & Elapsed Time	When Accomplished	Description
(1) Preflight	2 men 50 min	Prior to each flight of the day	Inspection consists of checking the helicopter for flight preparedness by performing visual examination and operational checks of certain components to assure no defects or maladjustments exist that could cause accidents or aborted missions
(2) Postflight	2 men 30 min	After each flight	Inspection consists of checking the helicopter to determine if it is suitable for another flight by performing visual examination of certain components. areas or systems to assure no defects exist which would be detrimental to further flight
(3) Phased inspection	3 men 4 hours	Every 100 flying hours	The complete inspection cycle for the weapon system is assumed to be 1200 hours. A portion of the total recurring inspection requirements is accomplished at each phased inspection. Certain items are considered basic phase requirements and will be accomplished in conjunction with each phase (100 flying hours) inspection. The inspection cycle will be repeated, starting with phase number one, 100 hours after completion of the 12th phased inspection. Included in each phased inspection are requirements for checking certain components, areas or systems of the helicopter to determine that no condition exists which, if not corrected, could result in failure or malfunction of the component prior to the next scheduled inspection

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TABLE XVII. HLH MAINTENANCE CONCEPT - ALTERNATE D (BASED ON USN UH-1E MAINTENANCE CONCEPT)

A. Scheduled Maintenance

Component	TBO
Forward rotor transmission	2000
Combining transmission	2000
Aft rotor transmission	2000
Sync shafting (6 sections)	3000
Slant shaft (2 sections)	3000
Engine drive shafts (6 sections)	3000
Forward rotor hub	2000
Aft rotor hub	2000
Forward rotor blades	on condition
Aft rotor blades	on condition
Forward swashplate	2000
Aft swashplate	2400
Engine	

B. Inspections

Type	Crew & Elapsed time	When Accomplished	Description
(1) Preflight	2 men 30 min	Prior to each flight	This inspection is to verify proper servicing and to inspect for obvious defects
(2) Postflight	2 men 30 min	After each flight	This inspection required to determine obvious degradation that may have occurred during flight, and required servicing.
(3) Daily	2 men 70 min	Prior to the first flight of the day. No more than 72 hours may elapse between such accomplishment and the following flight. The accomplishment of these requirements immediately prior to flight shall satisfy the requirements of a preflight inspection	This inspection required to inspect for latent defects at a greater depth than performed in the preflight or postflight inspections; to determine degradation and to insure the aircraft is safe for flight
(4) Calendar periodic	10 men 12 hours	At 17-week intervals	These requirements are to inspect the aircraft for material degradation that may have occurred during the preceding calendar and to perform essential preventive maintenance

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TABLE XVIII. RELATIONSHIP OF CH-47C MAINTENANCE CONCEPTS TO HLH MAINTENANCE CONCEPTS	
CH-47C Maintenance Concept	Analagous HLH Maintenance Concept
Basic (Current CH-47C)	Alternate A (Proposed HLH)
Alternate A (Proposed HLH)	Basic (Current CH-47C)
Alternate B (USN CH-46)	Alternate B (USN CH-46)
Alternate C (USAF H-3)	Alternate C (USAF H-3)
Alternate D (USN UH-1E)	Alternate D (USN UH-1E)

Conclusion

The CH-47C and HLH maintenance concepts are discussed further in a subsequent section of the report, dealing with the comparative analysis of these various missions and maintenance concepts. The various maintenance concepts and missions selected for comparative analysis coded in GPSS for inclusion in the model are presented in Appendix II.

MODEL VALIDATION

INTRODUCTION

There are two fundamental approaches employed in validating a simulation model--first, employ the model to simulate a system operation, and operate the actual system in its real environment and evaluate the comparable predicted versus achieved results. Although this is the most rigorous proof of model validity, it is generally too expensive to employ on large, complex simulations such as the R&M model. Furthermore, it is impossible in the case of the HLH, since this is a conceptual aircraft.

The second method of validation is to construct a relatively limited mathematical model which identifies the significant system interactions and can, therefore, be used to make predictions of system performance against which the simulated results can be compared. The major problem encountered employing this approach toward validating the R&M model is that there has been little success in developing a deterministic model which has adequately considered the significant interactions involved in the operations and maintenance of an aircraft fleet.

Thus, it has been necessary to employ a different approach to model validation in this analysis. The primary elements of model validation as employed in this study are the calculation of expected values for those parameters which are essentially independent stochastic variables and the identification of trends generated by parametric sensitivity analyses.

One of the major problems in calculating expected values for parameters of the R&M simulation model is the extreme difficulty of estimating the impact of queuing upon parametric values. Thus, to minimize queuing (and consequently its impact), essentially unlimited spares and personnel were employed for the initial baseline validation runs. When it was concluded that the model output was acceptably correlated to the expected values in this unlimited case, the storage definitions were redefined to impose the restriction of a true TO&E upon the model operation. Various sensitivity runs were then made to ensure that the model response to parametric input variations was not counter-intuitive. Finally, the comparative analyses performed for the various mission/maintenance concept combinations provided further reinforcement of the validity and flexibility of the basic model logic.

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BURN-IN ANALYSIS

Evaluating model achievement of stability is a process unique to each simulation model and its intended application. That is, a system has achieved a homeostatic condition when the major parameters by which the system performance is measured have reached a morphologically unchanging state.

The time it takes to reach this homeostatic state for the R&M simulation model is functionally dependent upon the number of transactions endogenous to the model. With the HLH and CH-47C models, the platoon size, monthly utilization, and maintenance action rates for the baseline scenarios are of sufficient magnitude to ensure stable operation in a 56-day simulation. Furthermore, stability is monitored in terms of the primary measures of effectiveness for this analysis which are availability (UPTIME/TOTAL TIME) and mission completion ratio (MISSIONS FLOWN/MISSIONS SCHEDULED). Table XIX shows several of the pertinent output parameters generated for the HLH over various simulated durations. Tables XX, XXI, and XXII display the output statistics generated for various time frames of simulated CH-47C operation, with various levels of maintenance personnel support.

Figure 9 shows the effect of run duration upon availability for the various burn-in runs that were made. These data support the conclusion that 56 days is adequate for the HLH and CH-47C baseline models.

It should be noted, however, that if future analysis were to consist of a significantly lower number of transactions or different (more refined) measures of effectiveness, the 56-day run duration might not be adequate to generate stable and, thus, statistically significant, results.

MODEL VALIDATION - HLH

Table XXIII identifies the expected values and baseline output statistics for 17 selected output parameters. A review of the output statistics shows an intuitively acceptable relationship between the quantitative values generated by the baseline model and the expected values. Furthermore, it can be seen that the distribution of error appears to be random with 59 percent of the output statistics greater than expected and 41 percent of the statistics less than or equal to expected.

Thus, the baseline model fulfills the first criterion of validation employed in this analysis; namely, morphological equivalence between output and expected statistics.

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TABLE XIX. HLH BURN-IN ANALYSIS
(Standard 36 Man TOE)

OUTPUT PARAMETERS	RUN DURATION - MONTHS				
	4	1	2	3	5
TOTAL NUMBER OF MISSIONS FLOWN	120	244	492	736	1227
TOTAL NUMBER OF MISSIONS CALLED	126	252	504	756	1260
TOTAL UTILIZATION*	240	488	984	1472	2454
TOTAL NUMBER OF DAILY INSP.	95	185	294	555	920
TOTAL NUMBER OF PMI INSP.	24	45	88	129	210
TOTAL NUMBER OF PMP INSP.	4	11	20	30	51
TOTAL DAILY MMH	57.0	111.0	176.4	330.0	552.0
TOTAL PMI MMH	240.0	450.0	880.0	1290.0	2100.0
TOTAL PMP MMH	80.0	220.0	400.0	600.0	1020.0
TOTAL UNS MAINT ACTIONS	270	566	987	1559	2592
TOTAL UNS MMH	1321.5	2226.0	3971.0	6367.5	10187.9
TOTAL SCH MMH	377.0	781.0	1456.4	2223.0	3672.0
TOTAL UNS EMT	357.7	600.3	1186.4	1760.8	2968.7
TOTAL SCH EMT	250.1	484.5	1011.9	14 /.2	2749.8
TOTAL MMH/FH	6.74	5.82	5.25	5.56	5.37
NORM DELAY	607.8	1084.8	2198.3	3258.0	5718.5
TOTAL AIR ABORTS	4	6	12	15	23
* MAINT ACTIONS - INFLT. ABORT	4	6	14	16	24
* MAINT ACTIONS INFLT.	14	30	41	77	125
* MAINT ACTIONS DURING PMI	148	265	470	719	1163
* MAINT ACTIONS AT DAILY	30	58	103	174	320
* MAINT ACTIONS AT PMP	74	207	359	573	960
MALF/FH	1.12	1.16	1.00	1.05	1.06
AVAILABILITY	79.9	82.06	81.85	82.05	81.08

*Total Mission Flight Hours Excluding Test Hops and Aborted Missions

TABLE XX.   CH-47 BURN-IN ANALYSIS
(UNLIMITED MEN)

OUTPUT PARAMETERS	RUN DURATION - MONTHS				
	1	2	3	4	5
TOTAL NUMBER OF MISSIONS FLOWN	702	1391	2092	2802	3492
TOTAL NUMBER OF MISSIONS CALLED	756	1512	2268	3024	3780
TOTAL UTILIZATION	1053	2086.5	3138.0	4201.0	5238.0
TOTAL NUMBER OF DAILY INSP	289	577	868	1159	1440
TOTAL NUMBER OF PMI INSP	35	72	103	133	170
TOTAL NUMBER OF PMP INSP	13	20	33	45	56
TOTAL DAILY MMH	1387.2	2769.6	4166.4	5563.2	6912.0
TOTAL PMI MMH	416.5	856.90	1225.7	1582.7	2023.0
TOTAL PMP MMH	585.0	900.00	1485.0	2025.0	2520.0
TOTAL UNS MAINT ACTIONS	1966	3458	5303	7045	8761
TOTAL UNS MMH	2514.65	4463.99	6983.74	9536.68	11811.05
TOTAL SCH MMH	2946.88	4599.01	7130.32	9458.55	11618.13
TOTAL UNS EMT	981.0	1948.8	2906.3	3972.1	4865.7
TOTAL SCH EMT	320.5	594.8	898.3	1205.7	1502.7
TOTAL MMH/FH	5.18	4.34	4.50	4.50	4.47
NORM DELAY	1301.5	2543.6	3804.6	5177.8	6368.4
TOTAL AIR ABORTS	31	72	105	126	164
# MAINT ACTIONS - INFLT ABORT	31	DATA NOT AVAILABLE	110	132	171
# MAINT ACTIONS INFLT	47		12U	156	202
# MAINT ACTIONS DURING PMI	242		688	891	1130
# MAINT ACTIONS AT DAILY	655		1934	2611	3303
# MAINT ACTIONS AT PMP	991		2391	3255	3955
MALF/FH	1.8	1.7	1.7	1.7	1.7
AVAILABILITY	87.89	88.17	88.20	87.96	88.15

TABLE XXI.   CH-47C BURN-IN ANALYSIS
(108 MAN TOE)

OUTPUT PARAMETERS	RUN DURATION - MONTHS				
	1	2	3	4	5
TOTAL NUMBER OF MISSIONS FLOWN	679	1347	2022	269C	3359
TOTAL NUMBER OF MISSIONS CALLED	756	1512	2268	3024	3780
TOTAL UTILIZATION	1018.5	2029.5	3033.0	4035.0	5038.5
TOTAL NUMBER OF DAILY INSP	278	569	828	1122	1397
TOTAL NUMBER OF PMI INSP	32	65	97	127	160
TOTAL NUMBER OF PMP INSP	14	20	33	44	52
TOTAL DAILY MMH	1334.40	2731.20	3974.4	5385.6	6705.6
TOTAL PMI MMH	380.8	773.5	1154.3	1511.3	1904.0
TOTAL PMP MMH	630.0	900.0	1485.0	1980.0	2340.0
TOTAL UNS MAINT ACTIONS	1993	3325	5086	6573	8296
TOTAL UNS MMH	2474.14	4380.47	6920.42	9030.59	11353.03
TOTAL SCH MMH	2793.45	4461.00	6809.00	9216.00	11183.00
TOTAL UNS EMT	2001.0	4136.9	6563.2	8614.0	10885.2
TOTAL SCH EMT	389.3	678.0	1082.4	1351.2	1645.4
TOTAL MMH/FH	5.17	4.38	4.53	4.52	4.38
NORM DELAY	2390.3	4834.9	7645.6	9965.2	12530.6
TOTAL AIR ABORTS	31	71	101	139	178
# MAINT ACTIONS - INFLIGHT ABORT	31	71	103	141	180
# MAINT ACTIONS INFLT	41	86	136	177	226
# MAINT ACTIONS DURING PMI	214	440	629	837	1051
# MAINT ACTIONS AT DAILY	679	1308	1964	2581	3295
# MAINT ACTIONS AT PMP	1028	1420	2254	2837	3544
MALF/FH	1.8	1.7	1.7	1.6	1.6
AVAILABILITY	77.76	77.51	76.29	76.82	76.69

TABLE XXII.   CH-47 BURN-IN ANALYSIS
(STANDARD TOE - 64 MEN)

OUTPUT PARAMETERS	RUN DURATION - MONTHS				
	1	2	3	4	5
TOTAL NUMBER OF MISSIONS FLOWN	677	1342	2010	2678	3331
TOTAL NUMBER OF MISSIONS CALLED	756	1512	2268	3024	3780
TOTAL UTILIZATION	1015.5	2051.5	3082.9	4107.9	5115.4
TOTAL NUMBER OF DAILY INSP	277	527	780	1053	1283
TOTAL NUMBER OF PMI INSP	34	65	94	128	158
TOTAL NUMBER OF PMP INSP	11	19	33	42	52
TOTAL DAILY MMH	1329.6	2529.6	3744.0	5054.4	6158.4
TOTAL PMI MMH	404.6	773.5	1118.6	1523.2	1880.2
TOTAL PMP MMH	495.0	855.0	1485.0	1890.0	2340.0
TOTAL UNS MAINT ACTIONS	1675	3137	4981	6415	7961
TOTAL UNS MMH	2107.03	4194.23	6771.26	8702.35	11008.81
TOTAL SCH MMH	2660.75	4563.62	6795.27	8682.01	10537.69
TOTAL UNS EMT	2196.8	5348.2	8361.4	10696.9	14570.4
TOTAL SCH EMT	325.6	682.8	1077.4	1435.9	1711.8
TOTAL MMH/FH	4.51	4.19	4.31	4.15	4.13
NORM DELAY	2522.4	6031.0	9438.8	12132.8	16282.2
TOTAL AIR ABORTS	33	55	98	125	170
* MAINT ACTIONS - INFLT ABORT	34	57	101	135	175
* MAINT ACTIONS INFLT	48	95	138	191	239
* MAINT ACTIONS DURING PMI	202	431	631	849	1044
* MAINT ACTIONS AT DAILY	631	1191	1790	2336	2849
* MAINT ACTIONS AT PMP	760	1363	2321	2904	3654
MALF/FH	1.65	1.53	1.62	1.56	1.56
AVAILABILITY	76.54	71.95	70.73	71.78	69.71

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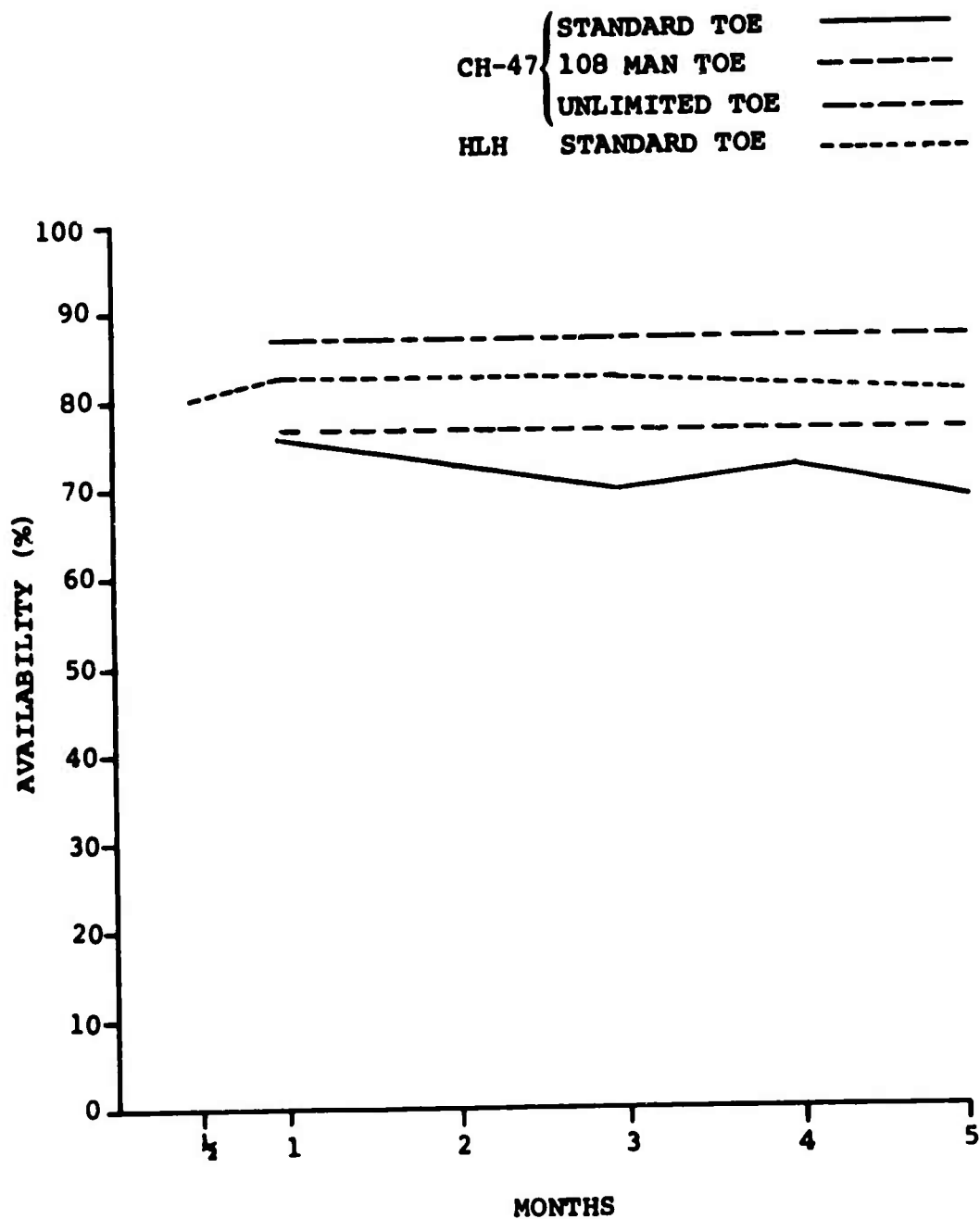
Figure 9.   Impact of Run Duration on Availability.

TABLE XXIII. HLH VALIDATION ANALYSIS

OUTPUT PARAMETERS	EXPECTED VALUES	BASELINE OUTPUT
Total number of missions demanded	504	504
Total number of missions completed	494	495
Total utilization	988	990
Total number of daily inspection	less than 504	348
Total number of PMI inspection	80	85
Total number of PMP inspection	20	23
Total daily MMH	less than 302.4	208.8
Total PMI MMH	800	850
Total PMP MMH	400	460
Total unscheduled maintenance actions	1038	1070
Total scheduled MMH	1502.4	1518.8
Total air aborts	10	9
No. Maintenance actions inflight abort	49	46
No. Maintenance actions during PMI	480	460
No. Maintenance actions at daily	less than 151	130
No. Maintenance actions at PMP	400	425
Malfunctions per Flight Hour	1.05	1.08

HLH SENSITIVITY ANALYSIS

The second step in validating the HLH model is to ensure that the model responds to parametric changes in an intuitively acceptable way. The data generated during this analysis is contained in Appendix I. This section identifies several of the trends displayed by this data and discusses their content and implications.

Figure 10 relates the platoon availability (UPTIME/TOTAL TIME) to the unscheduled maintenance action rate. Generally, the relationship between the data and the trend line is quite acceptable. There is however a notable exception identified with ① on the plot.

A review of the data which generated Figure 10 shows that the outlying point is justifiable in an analytical sense. The reason for this excursion is that the point 1 plotted at 67.09-percent availability is a result of the evaluation of model sensitivity to variations in platoon size. Specifically, this point is representative of a platoon size of 3 aircraft attempting to fly the baseline mission normally flown by a platoon of 11 aircraft.

The data plotted in Figure 11, relating direct maintenance man-hours/flight hour to unscheduled maintenance action rate and Figure 12, which shows availability as a function of TOE size, compares quite well to the plotted trends. Since these trends are of the shape generally displayed in the literature, no further discussion of these data appears necessary.

Finally then, it appears, based on the comparison of the baseline results with the expected values and the results of the sensitivity analysis, that the HLH R&M simulation model is, in fact, a valid representation of actual operations and maintenance environments it purports to depict.

MODEL VALIDATION - CH-47C

Table XXIV identifies the expected values and baseline results for 17 selected output parameters. A review of the results versus the parametric expected values confirms the statistical equivalence of results. Furthermore, the distribution of error for the 17 parameters for which expected values could be calculated appears to be random with 44 percent of the deviation positive, and 56 percent of the deviations zero or negative. Thus, it would appear that the CH-47C model passes the first step of validation as defined in this report; namely, the morphological equivalence of model results and expected results.

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MAINTENANCE ACTION RATE
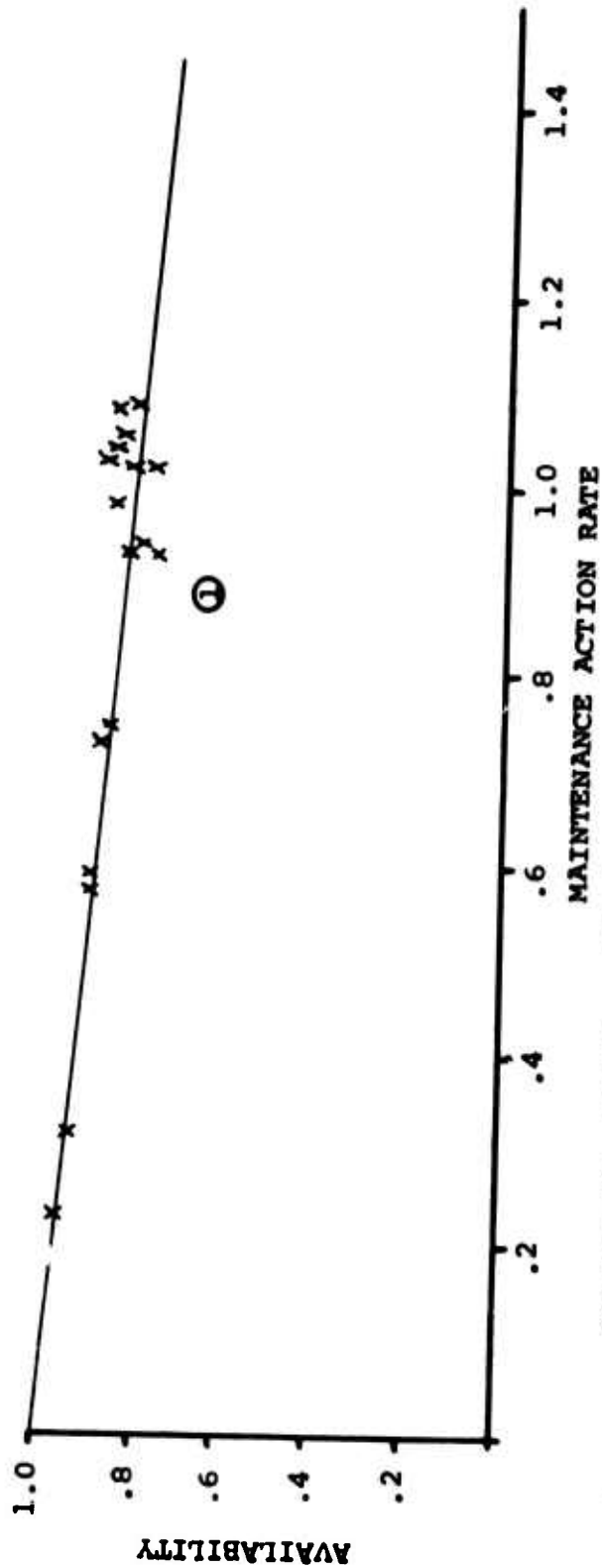
AVAILABILITY

Figure 10. HLH Sensitivity Analyses - Availability Variations.

MAINTENANCE ACTION RATE

MMH/FH
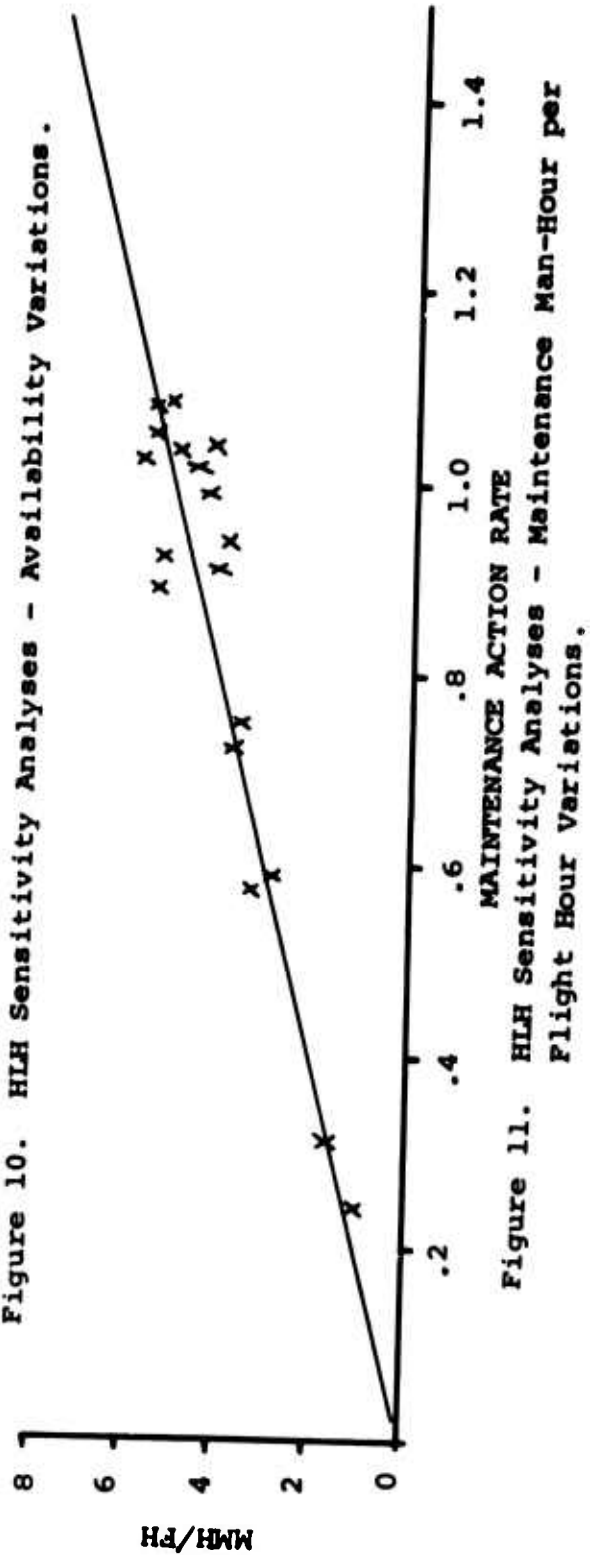
Figure 11. HLH Sensitivity Analyses - Maintenance Man-Hour per Flight Hour Variations.

51
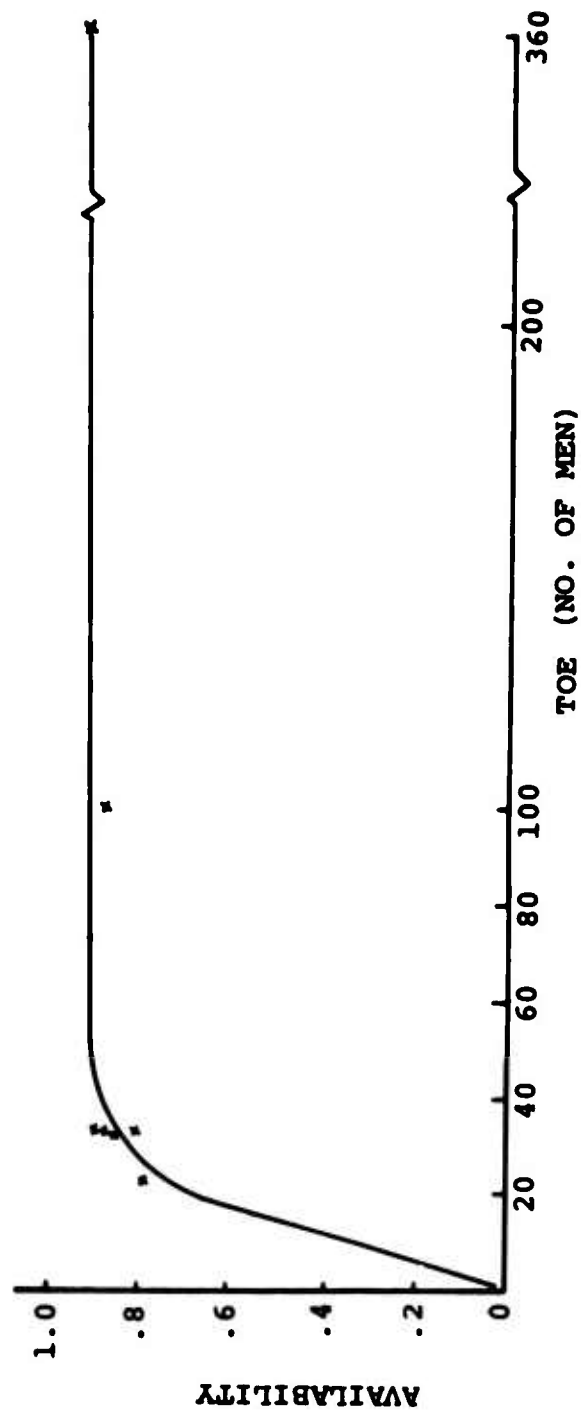
Figure 12. HLH Sensitivity Analyses - Impact of TOE Size Upon Availability.

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TABLE XXIV. CH-47C VALIDATION ANALYSIS

OUTPUT PARAMETERS	EXPECTED VALUES	BASELINE OUTPUT
Total number of missions demanded	1512	1512
Total number of missions completed	1426	1372
Total utilization	2139	2058.0
Total number of daily inspection	less than 896	680
Total number of PMI inspection	66	69
Total number of PMP inspection	22	20
Total daily MMH	less than 4300	3264
Total PMI MMH	785.4	821.1
Total PMP MMH	990	900.0
Total unscheduled maintenance actions	2888	2920
Total air aborts	65	66
No. Maintenance actions inflight abort	65	66
No. Maintenance actions inflight	92	95
No. Maintenance actions during PMI	442	473
No. Maintenance actions at daily	less than 1526	853
No. Maintenance actions at PMP	1474	1433
Malfunctions per Flight Hour	1.35	1.42

CH-47C SENSITIVITY ANALYSES

The second step in validating the CH-47C model is to perform
several trend analyses which will demonstrate that the model
responds to parametric variations in an intuitively acceptable
manner.

Figures 13 and 14 show the impact of changes in maintenance
action rate upon platoon availability and maintenance man-hours
per flight hour, respectively. In both of these figures,
there are two distinctly different populations. These popu-
lations exhibit the impact of NORS delay upon availability and
maintenance man-hours per flight hour. It is obvious that
availability must decrease when NORS delays are possible. It
is not obvious that maintenance man-hours per flight hour
should decrease when NORS delays are encountered. However,
after careful review of the data, it is found that the MMH/FH
decreases where NORS delays are encountered because less main-
tenance is being generated, due to the restricted platoon
utilization. This is primarily due to the reduced number of
periodic inspections encountered during situations of lower
utilization. It can be seen, therefore, that the model re-
sponds in an intuitively acceptable manner for those cases
presented.

This proper response of the model to parametric changes, when
combined with the previously discussed statistical equivalence
of model results with expected values, constitutes the valida-
tion of the CH-47C R&M model.
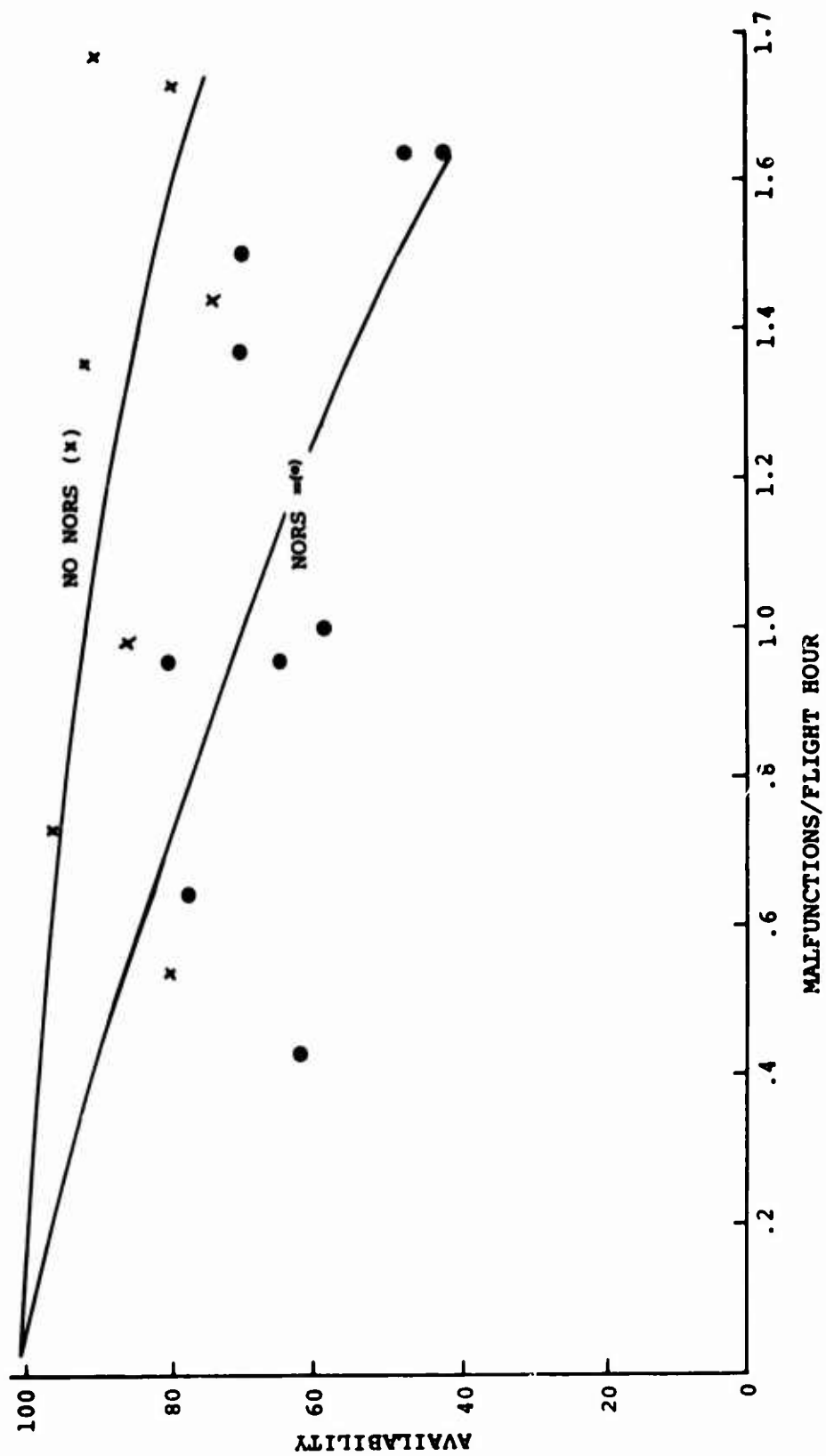
Figure 13. CH-47C Sensitivity Analysis – Availability as a Function of Malfunction Rate.
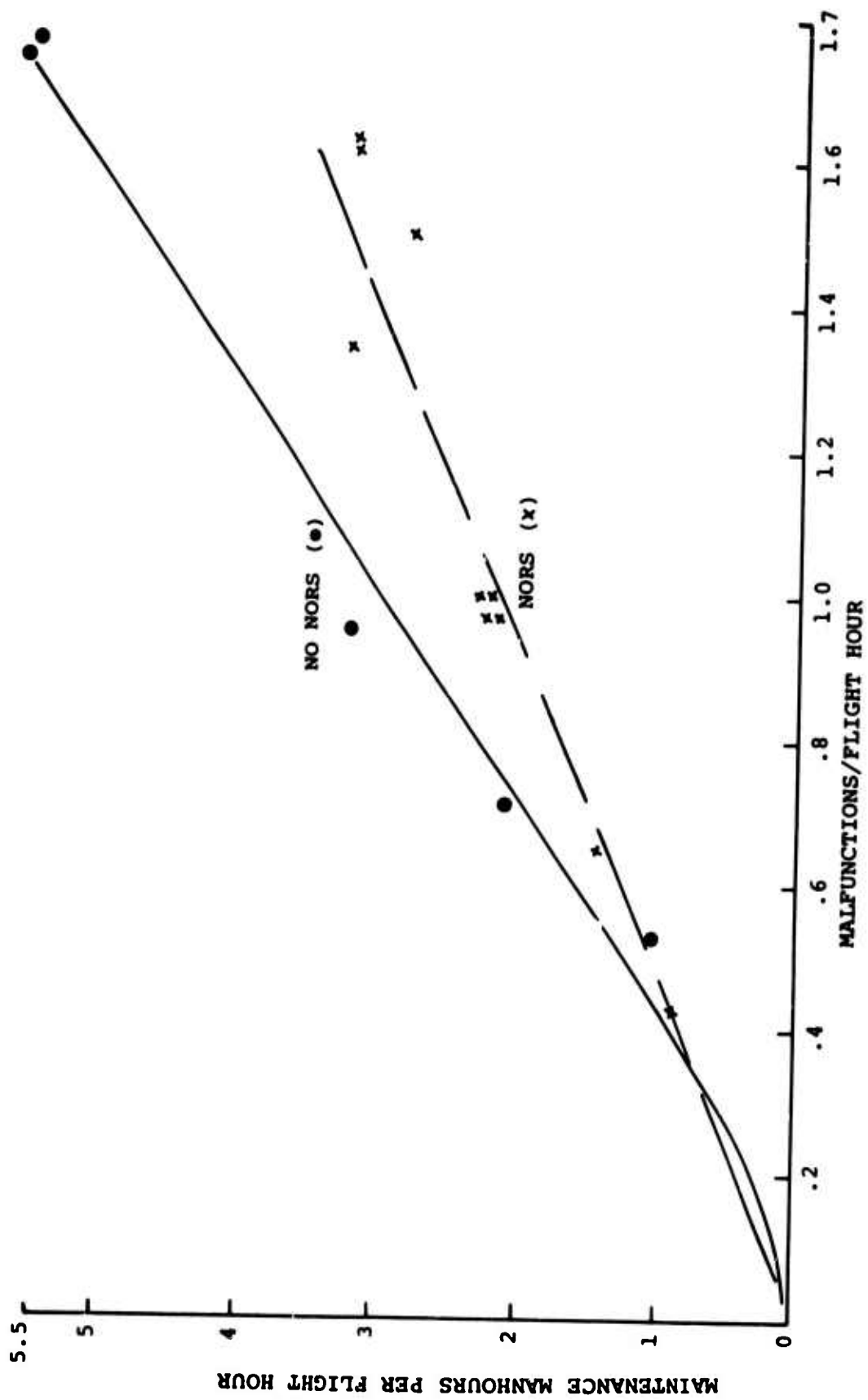
COMPARATIVE ANALYSIS

INTRODUCTION

In order to demonstrate model validity and flexibility, an analysis was performed, comparing various maintenance concepts over various mission profiles. It was the main intention of this exercise to demonstrate model validity through a simulated maintenance analysis, not to perform a rigorous analysis of each of the maintenance support plan capabilities. As such, the results of these analyses should be considered indicative of the relative merits of each concept, rather than absolute statements of the quantitative differences between the various alternate maintenance concepts.

COMPARATIVE RESULTS

CH-47C

Appendix III contains the results of the twenty cases run during the CH-47C comparative analysis. Table XXV shows the sequence in which the simulations took place.

Figures 15 through 17 identify the types of information that can be extracted from the data contained in Appendix III for the CH-47C.

In preparing the inputs for the various comparative analyses, it is usually necessary to reestimate the occurrence probabilities and maintenance action distributions for the various decision locations within the model. In doing this it is recommended that the method previously discussed in the HLH R&M data section of this report be used.

Whenever the mission/maintenance concept variation is significantly different from the baseline, it may be difficult to estimate the achievable utilization. This is especially the case for surge missions with limited TOE's. Thus, the estimated distribution of inspections, and consequently the maintenance distribution and MALF/FH, rate may not occur as anticipated. In these situations, the alternatives are to redistribute the maintenance actions and rerun the case or to modify the output using a method which will transform the output statistics to a common malfunction rate.

HLH

The results of the 20 cases run during the HLH comparative analysis are contained in Appendix III. Table XXVI identifies the general sequence in which these runs were made. The

TABLE XXV. SELECTION OF CH-47C ALTERNATE MISSIONS AND MAINTENANCE CONCEPTS

Maintenance Concepts \ Missions	Logistic Support 180 Hrs/Month	CONUS Minimum 30 Hrs/Month	Ft. Rucker Lead-The-Fleet 100 Hrs/Month	Combat Support Baseline 54 Hrs/Month
Basic Baseline Daily - End of day PMI - Every 25 hrs PMP - Every 100 hrs 1200-2400 hr TBO's	2	4	3	1
Alternate A Firm - After each day 10 hr inspection Phased PMP On condition	6	14	13	5
Alternate B Turnaround - After each flight Daily - Prior to first flight Calendar - Every 34 weeks 1200-2400 hr TBO's	10	16	15	7
Alternate C Preflight - Prior to first flight Postflight - After each flight Phased PMP - 100 hr intervals On condition	9	17	18	8
Alternate D Preflight Postflight Daily Calendar - 17 week intervals	12	20	19	11
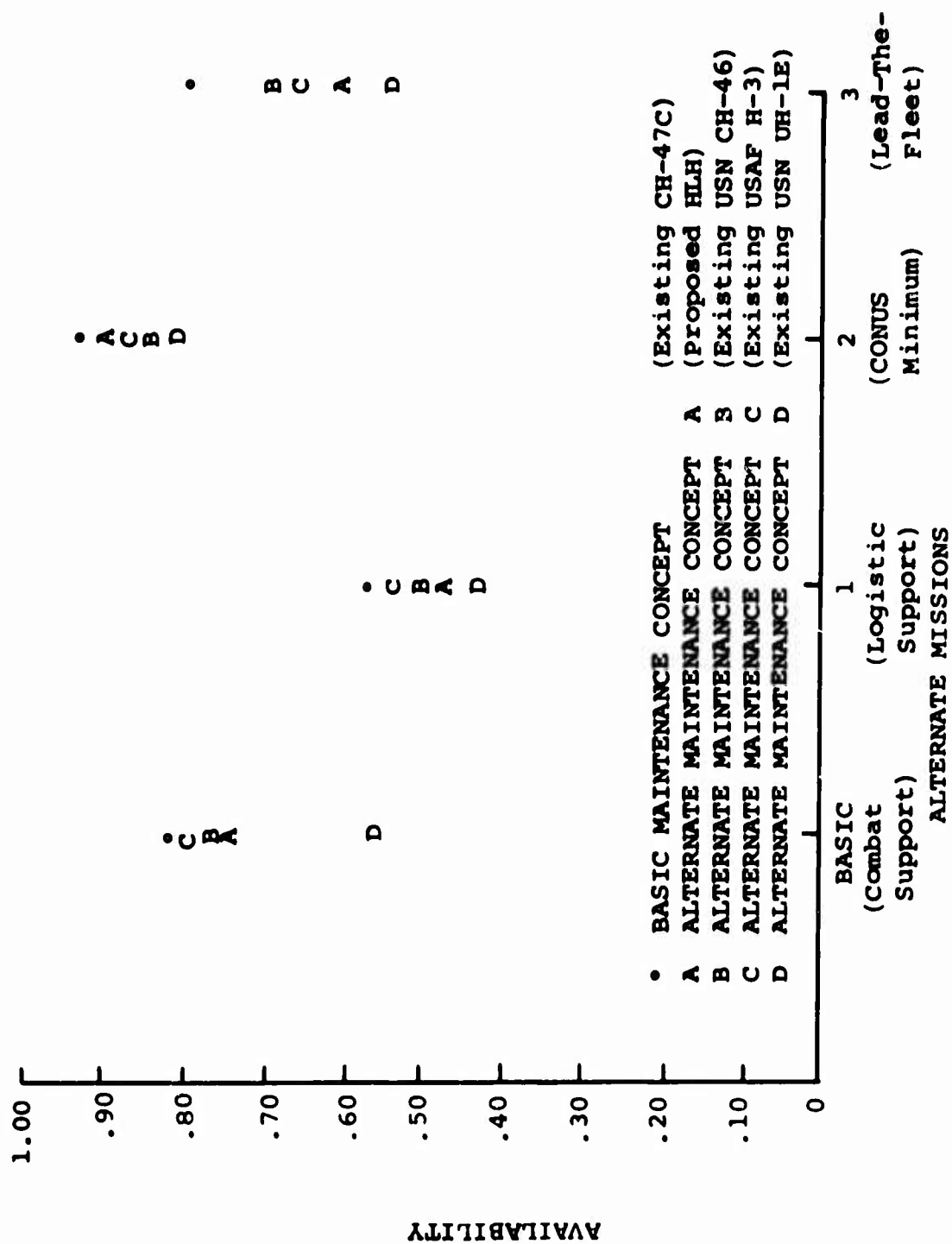
Figure 15. CH-47C Comparative Analysis – Availability Variations.

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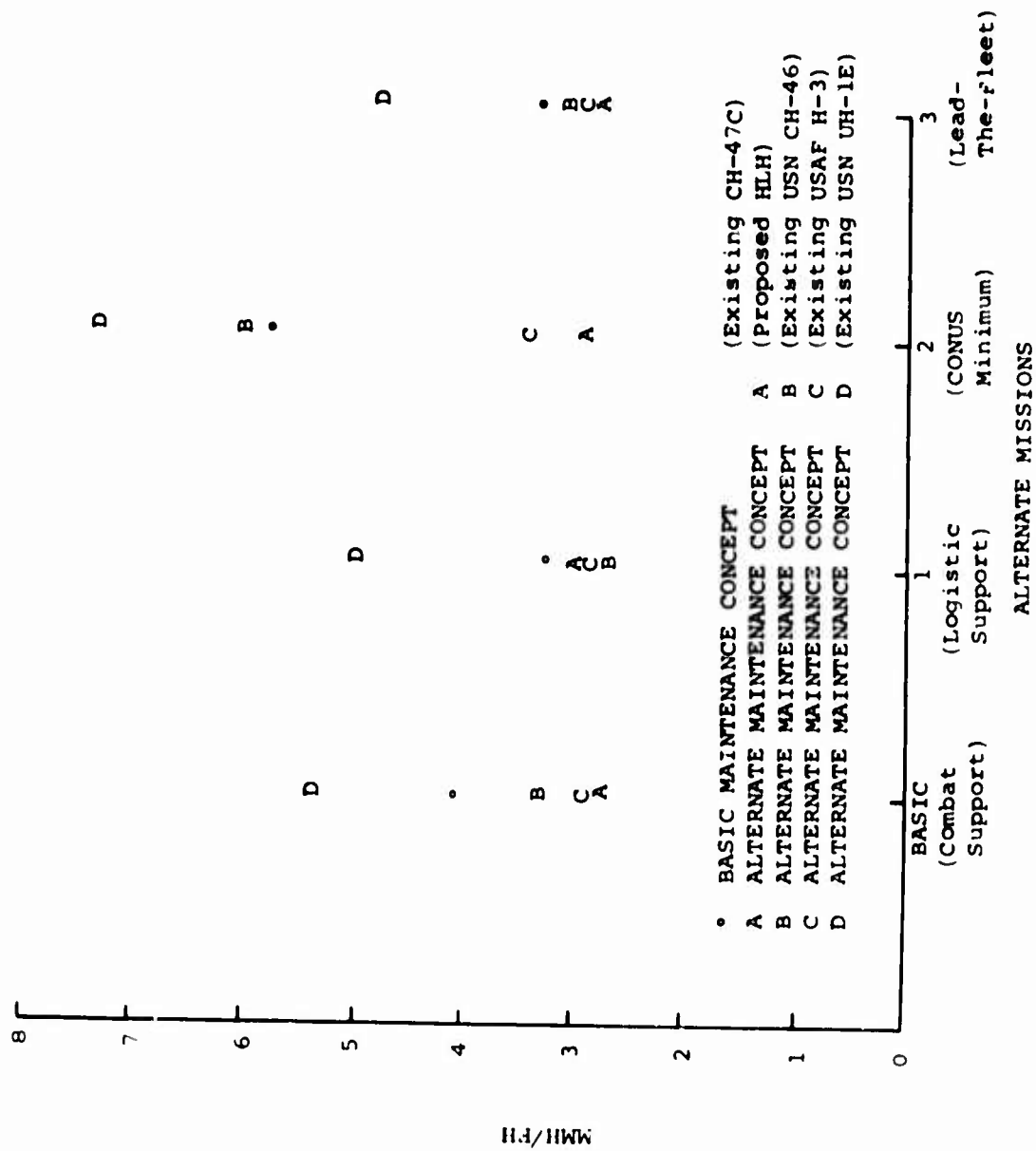
Figure 16. CH-47C Comparative Analysis - Maintenance Man-Hour per Flight-Hour Variations
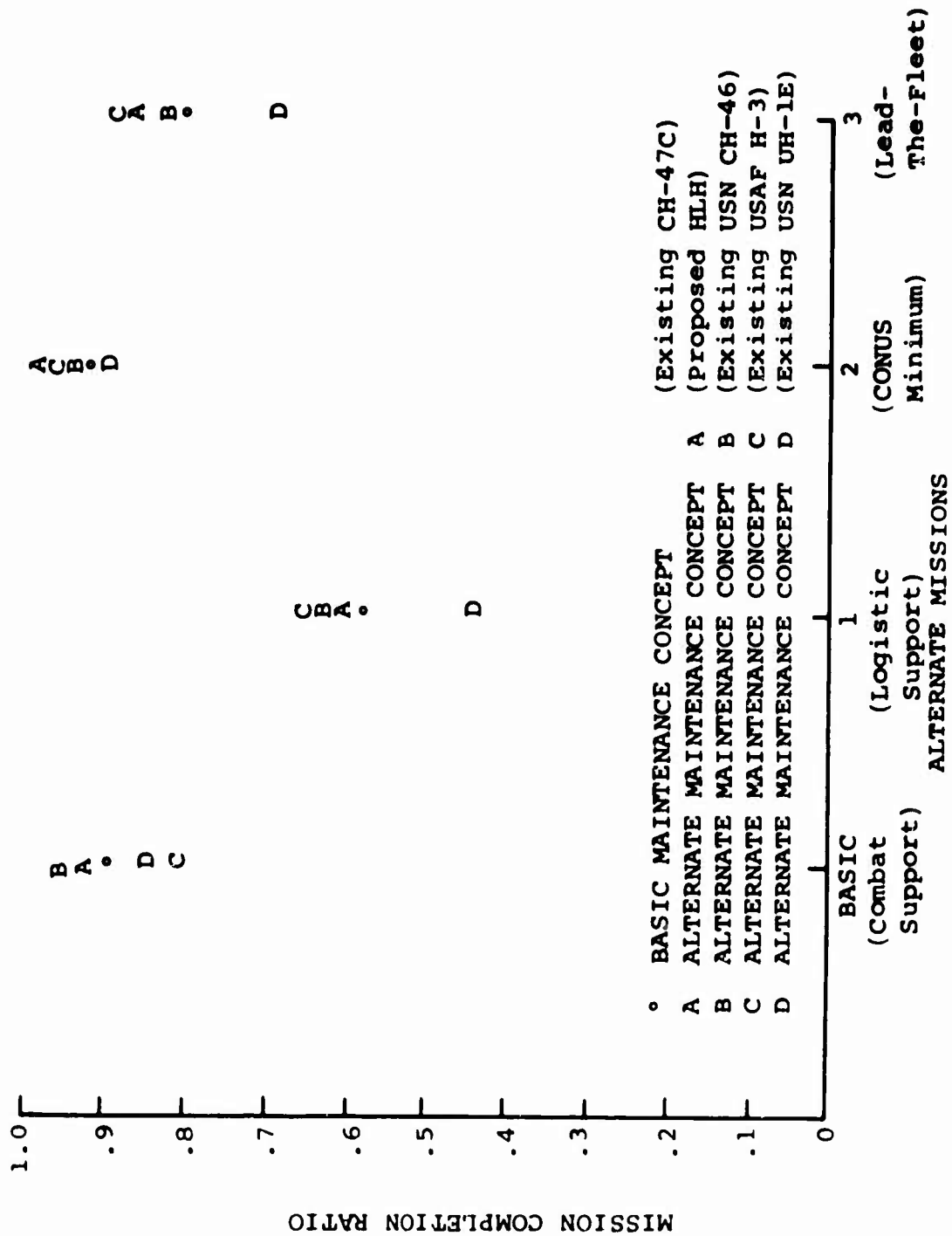
Figure 17. CH-47C Comparative Analysis – Mission Completion Ratio Variations.

TABLE XXVI. SELECTION OF HLH ALTERNATE MISSIONS AND MAINTENANCE CONCEPTS

Maintenance Concepts \ Missions	Container Unloading 150 Hrs/Month	CONUS - Minimum Util 20 Hrs/Month	Combat Support Surge 300 Hrs/Month	Combat Support Baseline 50 Hrs/Month
Basic Baseline Firm - End of day 10 hour 50 hour phased On condition	3	4	2	1
Alternate A Daily - End of day Intermediate - 25 hours PMP - 100 hours TBO's	19	14	7	5
Alternate B Turnaround - After each flight Daily - Prior to first flight Calendar - 34 weeks	17	15	8	11
Alternate C Preflight - Before every flight Postflight - After each flight Phased PMP - Every 100 hours On condition	20	13	9	6
Alternate D Preflight - Before each flight Postflight - After each flight Daily - Before first flight Calendar - 17 weeks	18	16	10	12

information extracted from these data are presented in Figures 18 through 20.

ANALYSIS AND RANKING OF COMPARATIVE RESULTS

In order to rank the various maintenance concepts, it was necessary to derive a measure of effectiveness which could be used for comparing the results of the simulations. The three chosen parameters are availability, mission completion ratio, and total maintenance man-hours per flight hour. The weighting factors employed on these parameters are displayed in the following equation.

INDEX OF MERIT = (.75)(MISSION COMPLETION RATIO)

$$+ (.15)(AVAILABILITY) + \frac{(.10)}{(MMH/FH)}$$

To be consistent with the terminology used in Appendix III, the term Index of Merit is used in place of Measure of Effectiveness.

This Index of Merit has been plotted for each mission for the CH-47C and HLH in Figures 21 and 22, respectively. A review of these figures show that the previously existing (or basic) maintenance concepts are the best for most missions.

The ranking for the CH-47C and HLH maintenance concepts, resulting from an analysis of these figures, is shown in Table XXVII. This ranking has been derived by assuming that all the alternate missions are of equal weight.

CONCLUSIONS OF COMPARATIVE ANALYSIS

Table XXVII shows that the HLH basic maintenance concept performs best for the cross section of missions for both the CH-47C and HLH with respect to the identified index of merit. Modifying the index of merit could change this conclusion; however, it appears that the R&M simulation model is sufficiently sensitive to reflect the benefits of alternate maintenance concepts.
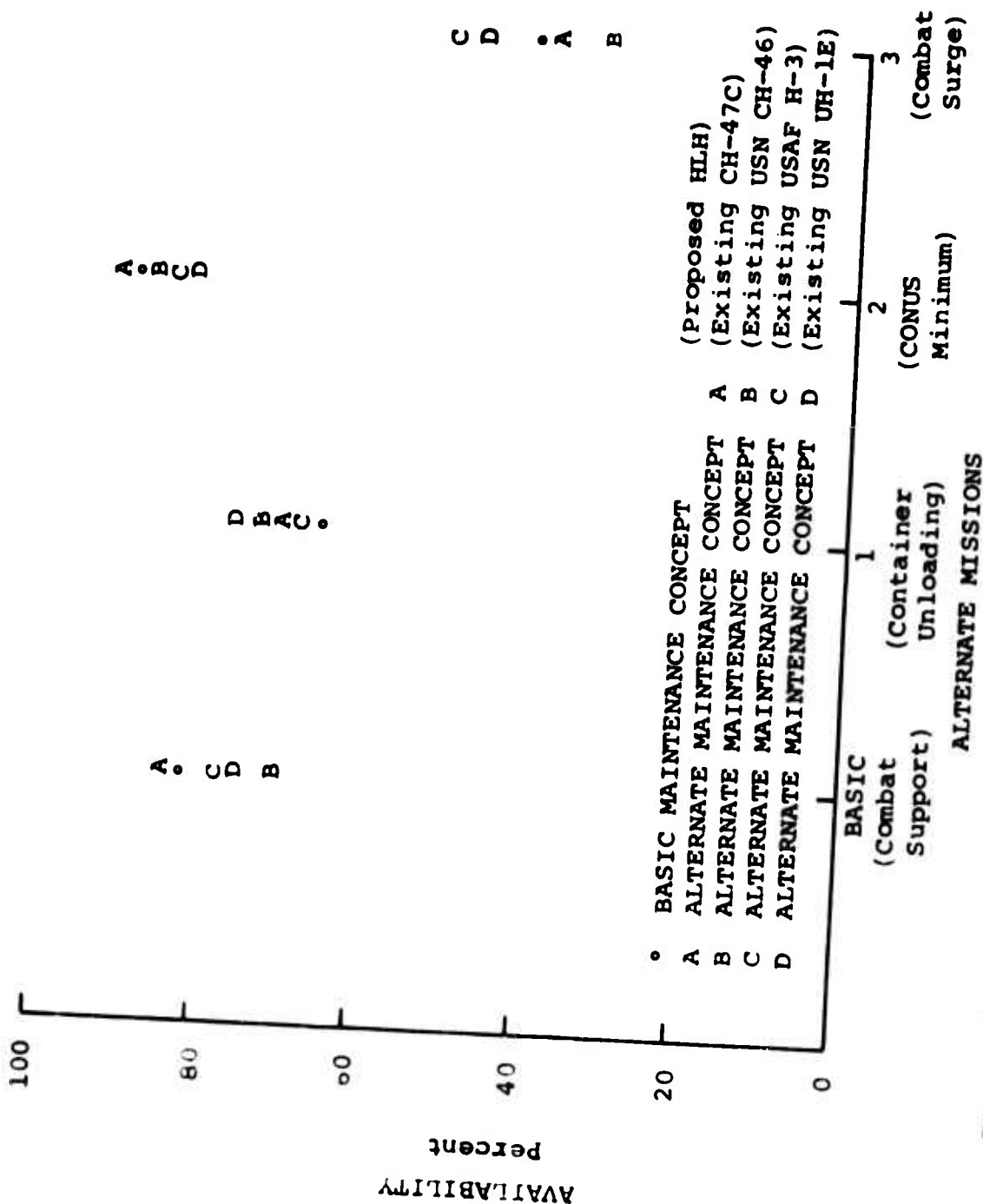
Figure 18. HLH Comparative Analysis - Availability Variations.

MMH/FH

10
9
8
7
6
5
4
3
2
1
0

A
B
D
•C

A
C•D
B

B
C

•

B
A

D•C

BASIC
(Combat
Support)

(Container
Unloading)

(CONUS
Minimum)

(Combat
Surge)

ALTERNATE MISSIONS

•   BASIC MAINTENANCE CONCEPT   (Proposed HLH)
A   ALTERNATE MAINTENANCE CONCEPT A   (Existing CH-47C)
B   ALTERNATE MAINTENANCE CONCEPT B   (Existing USN CH-46)
C   ALTERNATE MAINTENANCE CONCEPT C   (Existing USAF H-3)
D   ALTERNATE MAINTENANCE CONCEPT D   (Existing USN UH-1E)
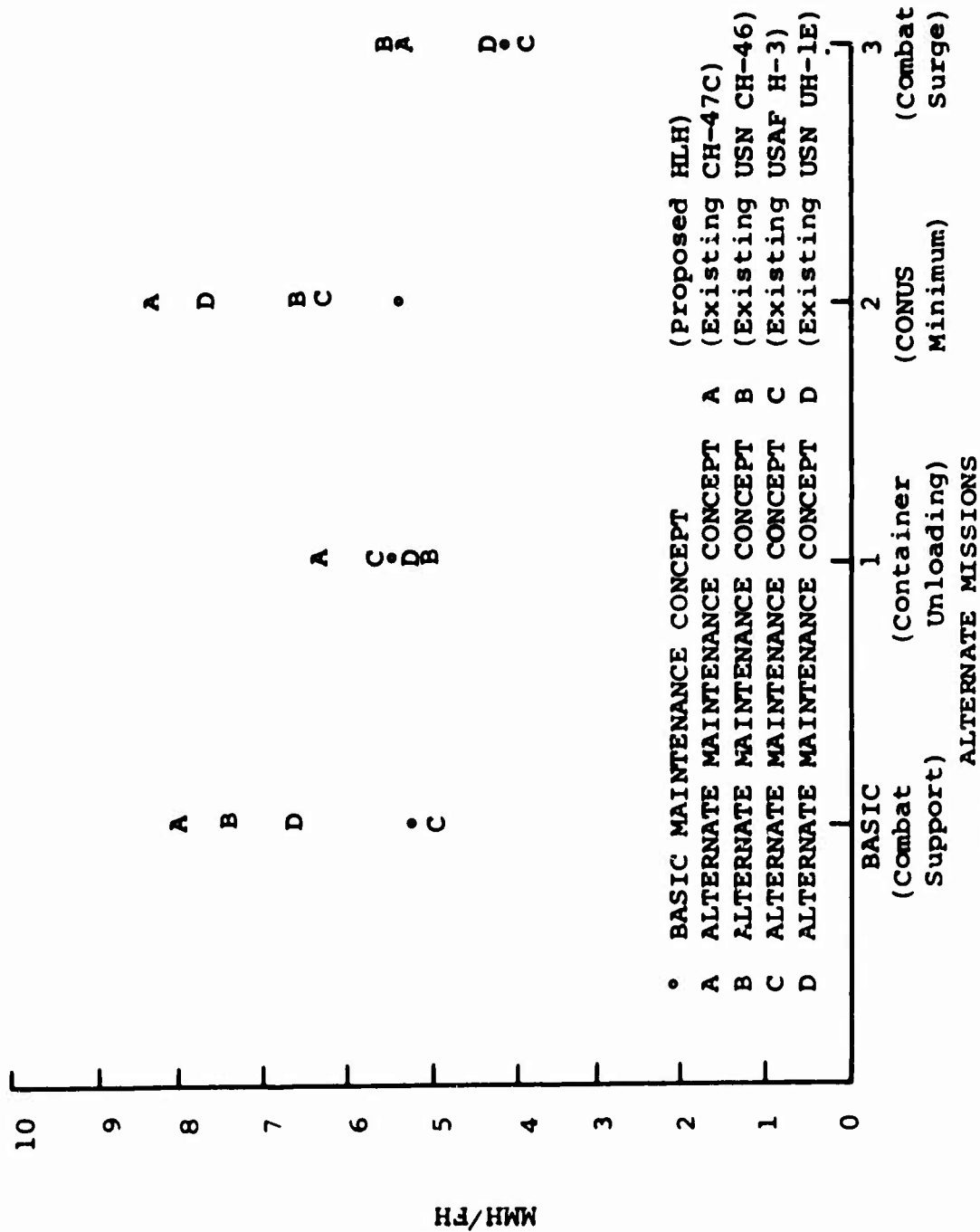
Figure 19. HLH Comparative Analysis - Maintenance
Man-Hour per Flight-Hour Variations.

MISSION COMPLETION RATIO

1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0

BASIC
(Combat
Support)

1
(Container
Unloading)

2
(CONUS
Minimum)

3
(Combat
Surge)

ALTERNATE MISSIONS

°   BASIC MAINTENANCE CONCEPT
A   ALTERNATE MAINTENANCE CONCEPT   A   (Proposed HLH)
B   ALTERNATE MAINTENANCE CONCEPT   B   (Existing CH-47C)
C   ALTERNATE MAINTENANCE CONCEPT   C   (Existing USN CH-46)
D   ALTERNATE MAINTENANCE CONCEPT   D   (Existing USAF H-3)
    ALTERNATE MAINTENANCE CONCEPT   (Existing USN UH-1E)
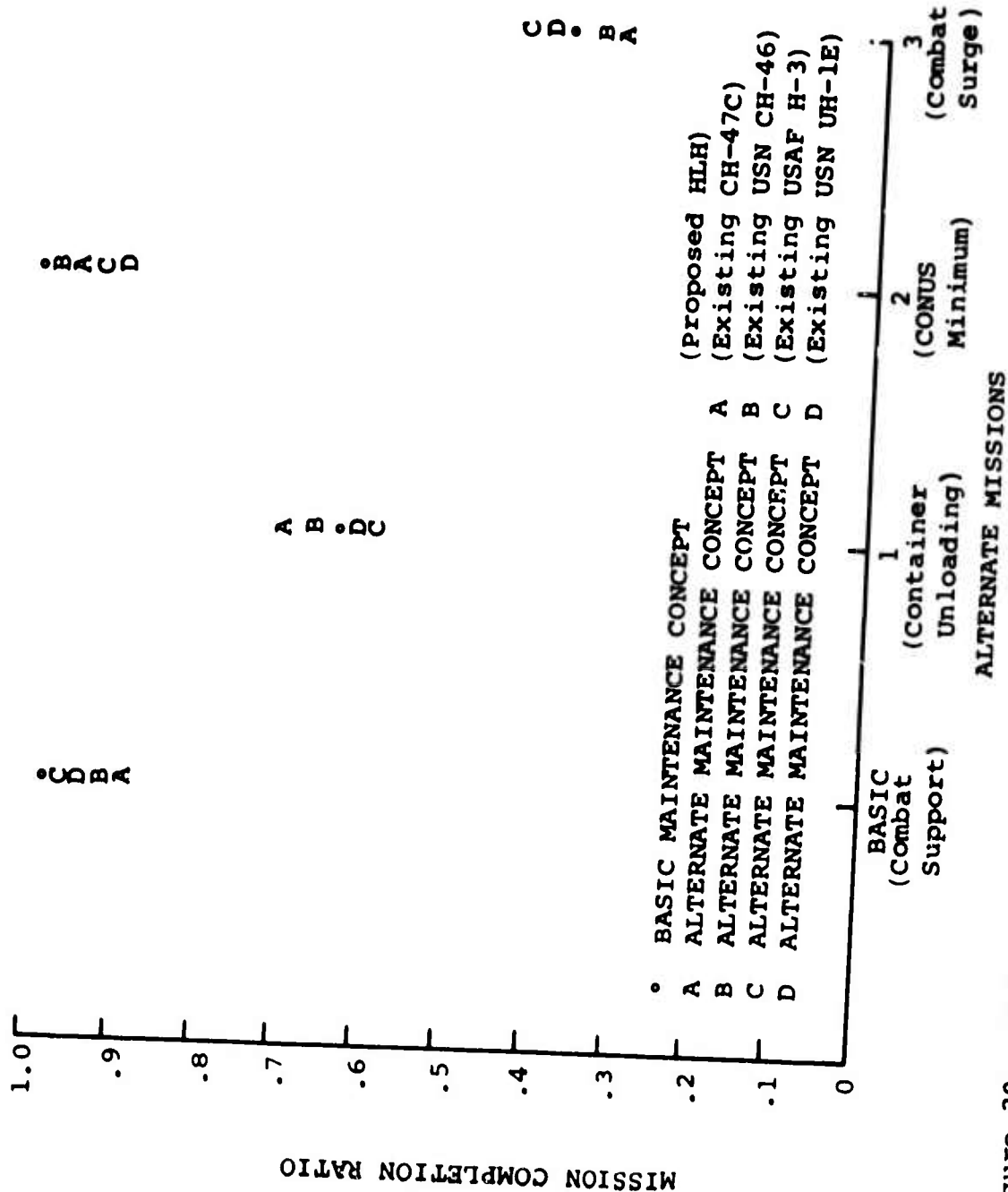
Figure 20.   HLH Comparative Analysis - Mission Completion Ratio Variations.

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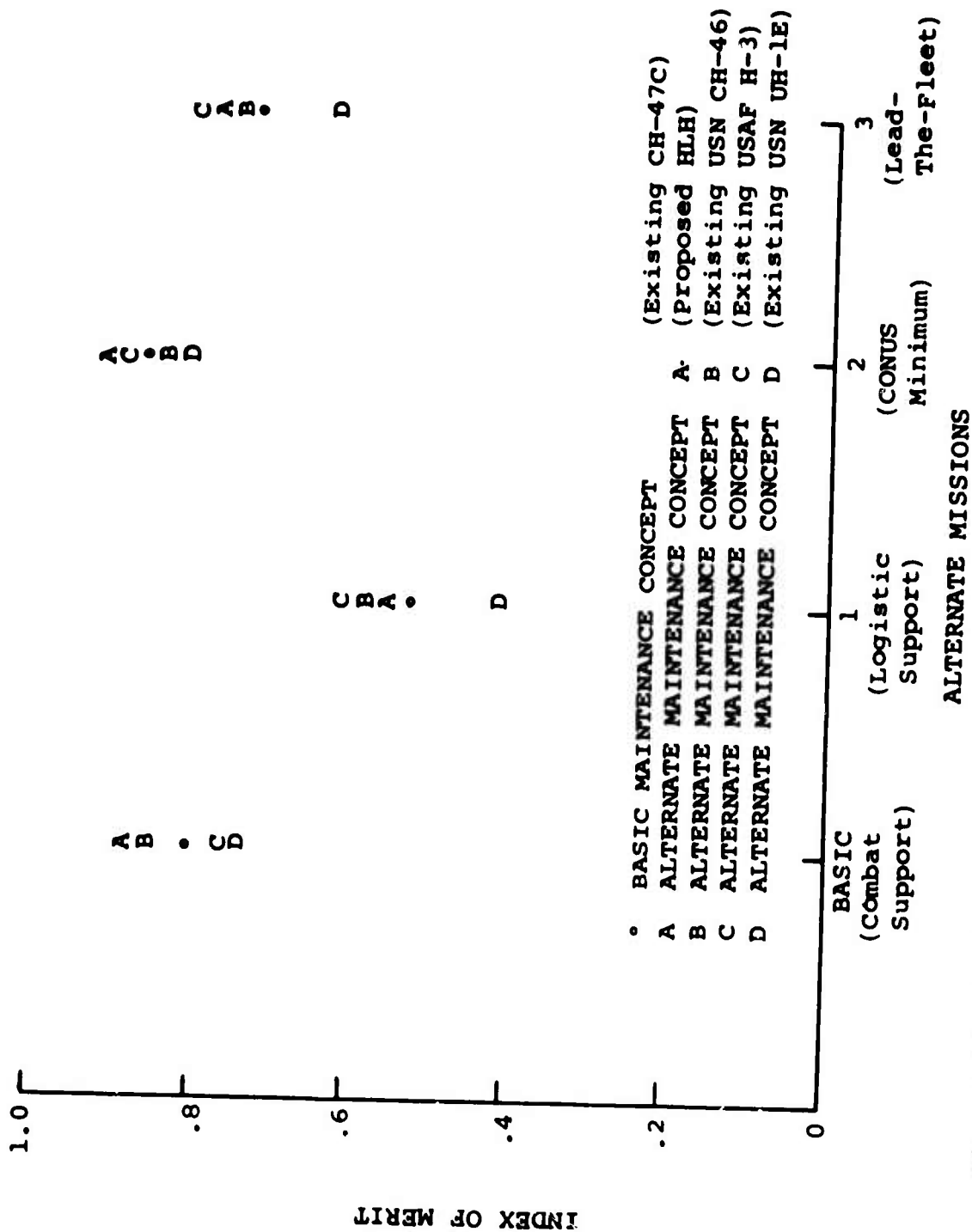
Figure 21. CH-47C Comparative Analysis - Index of Merit Variations.

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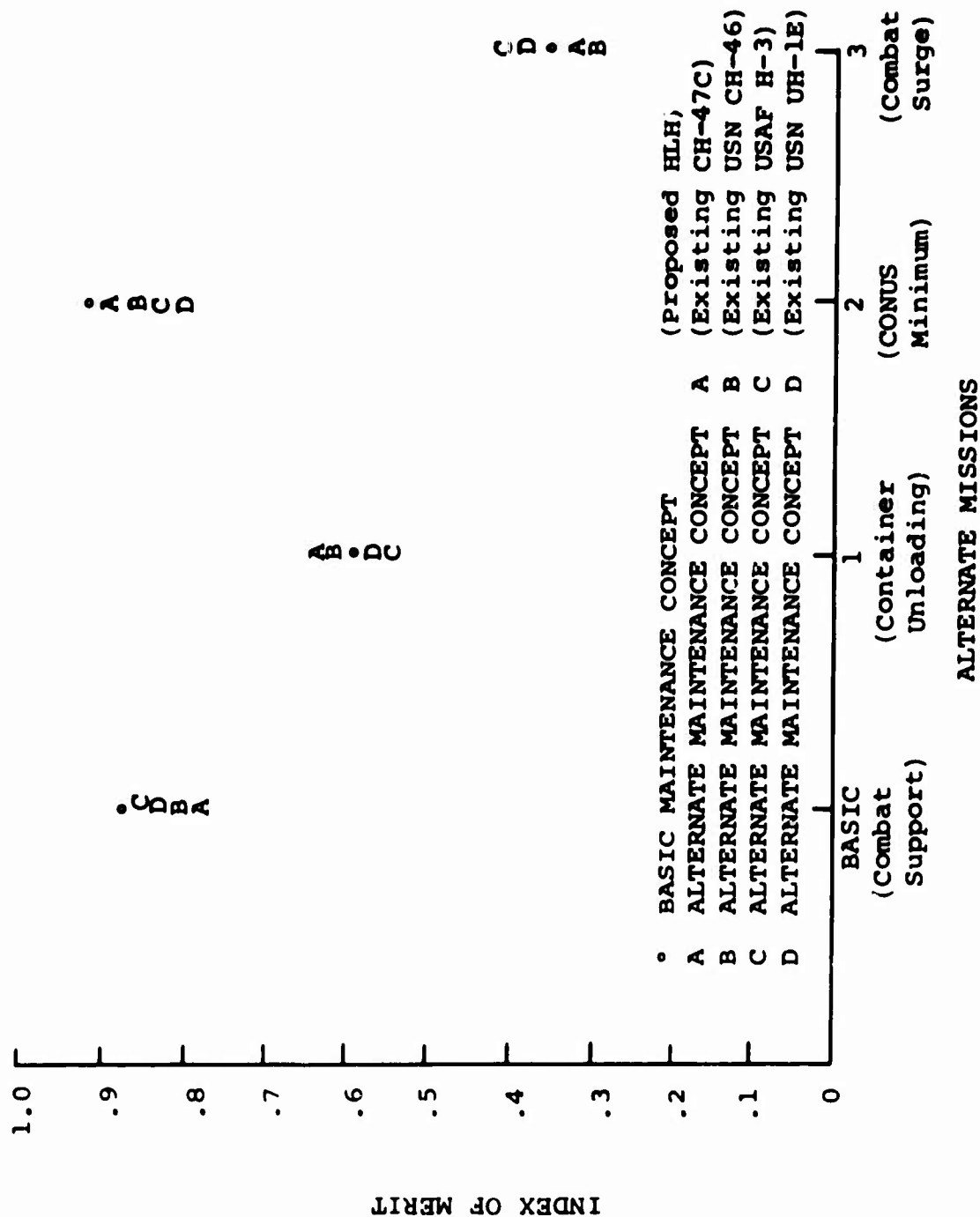
Figure 22. HLH Comparative Analysis - Index of Merit Variations.

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TABLE XXVII. RELATIVE RANKING OF MAINTENANCE CONCEPTS

CH-47C		HLH	
Rank	Maintenance Concepts	Rank	Maintenance Concepts
1	Alternate Maintenance Concept A	1	Basic Maintenance Concept
2	Alternate Maintenance Concept C	2	Alternate Maintenance Concept C
3	Alternate Maintenance Concept B	3	Alternate Maintenance Concept A
4	Basic Maintenance Concept	4	Alternate Maintenance Concept D
5	Alternate Maintenance Concept D	5	Alternate Maintenance Concept B

CONCLUSIONS

As a result of this study, valid R&M simulation models for the CH-47C and HLH are now available for the first time. In their present form, the models are more than adequate for further analyses similar to those performed in this study. That is, the model is extremely useful in evaluating the impact upon system effectiveness of major R&M differences.

Model validity has been established through various analytical techniques, including the evaluation of model sensitivity to parametric input changes. Model flexibility has been demonstrated through the various comparative analyses. Finally, model plausibility has been confirmed through the extended application of the model, observation of model response to logical changes, and detailed analysis of model operation with respect to logical validity. This last point is an almost intuitive judgement of the model's capability, based upon all aspects of model representation of realistic operations and maintenance environment.

In summary then, the developed models are valid representations of the actual O&M environments for the aircraft they simulate. These models are flexible to provide the Army with a tool for rapid response to fairly complex R&M questions. It should be noted, however, that the model's value is functionally dependent upon its level of detail. As such, it is a complex tool, requiring substantial skill in application and analysis of results. As such, it is critical that the application be made by people competent in the analytical areas of operations research and familiar with the logical structure of the programs. These powerful and complex models, although extremely valuable if well applied, could be equally misleading and, consequently, detrimental if misused.

RECOMMENDATIONS

It is recommended that the Army continue to develop the R&M model to maximize its flexibility and utility. It must always be remembered that the simulation model derives its value from its application, not merely its existence. Therefore, in most cases, further refinement to improve user orientation is cost effective. This position is reinforced by a statement taken from Ackoff in Scientific Method*.

> "In general, the amount of analysis required to construct a model is inversely related to the ease of manipulating it once it has been constructed."

Some of the specific areas that are considered viable candidates for modification are:

- Develop input-controlled output editor to provide the user with flexibility in selecting output parameters relevant to his analysis.

- Eliminate constants from logic. Wherever possible, where constants remain in the logic, they should be fully justifiable and justified.

- Develop deterministic spares routine which could be a user-selected option available in lieu of the current probabilistic routine.

- Modify off-aircraft maintenance routines to allow for the identification of maintenance personnel doing off-aircraft repairs.

- Develop personnel substitution routine with user definition of policy of personnel substitution.

None of these recommendations are critical to the current R&M model. They are presented here as candidates for future refinement and enhancement or generalization of the model to further increase its utility.

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*Ackoff, Russell L., SCIENTIFIC METHOD OPTIMIZING APPLIED RESEARCH DECISIONS, New York, John Wiley & Sons Inc., 1962, p. 110.

APPENDIX I
RESULTS OF SENSITIVITY ANALYSES

To demonstrate model sensitivity to changes in various mainte-
nance parameters, several sensitivity analyses were identified
and simulated. These analyses were structured to demonstrate
model response to parametric changes. The discrete situations
simulated were significant variations in parametric input,
rather than meaningful representations of the simulated air-
craft. As such, the value of the analyses is found in the
identified trends and model responses, rather than in the
quantitative outputs generated.

CH-47C

The CH-47C sensitivity analyses considered model response to
parametric changes in the areas of TOE size and NORS prob-
abilities. The data derived from these simulations is dis-
played in Table XXVIII. These results are discussed in the
Model Validation section.

HLH

The HLH sensitivity analyses considered model response to
parametric changes in four areas:

● Number of aircraft per platoon

● TOE size and distribution of personnel

● PMI/PMP intervals

● Maximum number of up-squawks per aircraft

The data derived from the simulations performed in these
analyses are presented in Tables XXIX through XXXII. A
discussion of these results and the identification of
trends displayed by these analyses are contained in the
Model Validation section.

TABLE XXVIII. CH-47C SENSITIVITY ANALYSES

Output Parameters		Essentially Infinite TOZ						Mission No.
	Basic / Basic	2 / Basic	3 / Basic	2 / B	3 / X	2 / C	3 / B	Maint. Conc.
Total number of missions flown	702	235	255	243	240	239	266	
Total number of missions called	756	252	260	252	280	252	280	
Total utilization	1053	352.5	382.5	364.5	360	358.5	399	
Total number of preflight inspections	0	0	0	0	0	262	0	
Total number of daily inspections	289	68	25	87	29		34	
Total number of PMI inspections	35	17	14	218*	32	196*	209*	
Total number of PMP inspections	13	5	3	2	8	1	0	
Total preflight MMH	0	0	0	0	0	262	0	
Total daily MMH	1387	326.4	120	417.6	11.6	117.6*	163.2	
Total PMI MMH	416.5	202.3	166.6	65.4*	280	10.5	62.7*	
Total PMP MMH	585.0	225.0	135.0	234.0	140	260	213	
Total unscheduled maintenance actions	1966	617	364	496	514	18	0	
Total scheduled maintenance actions	216	72	54	34	54		0	
Total unscheduled MMH	2138.8	698.31	435	600.3	624.9	282.7	238.7	
Total scheduled MMH	2946.8	1302.3	849	1047.4	856.7	539.6	225.9	
Total unscheduled EMT	981.0	525.3	165.8	515.7	248.2	288.3	157.2	
Total scheduled EMT	320.5	135.3	117.5	99.4	264	70.3	234.0	
Total MMH/FH	5.18	5.38	3.20	4.31	3.78	2.15	1.13	
Total NORS	0	0	0	0	0	0	0	
Total ground abort	0	0	0	0	0	0	0	
GSE delay	0	0	0	0	0	0	0	
NORS delay	0	0	0	0	0	0	0	
NORM delay	1301.5	660.6	283.3	615.1	512.2	358.6	391.2	
Total air aborts	31	16	9	8	11	13	7	
No. maintenance actions at preflight	0	0	0	0	0	0	0	
No. maintenance actions at aircrew	0	0	0	0	0	125	0	
No. maintenance actions inflight	78	11	14	17	17	22	13	
No. maintenance actions during PMI	242	194	160	100*	372	65*	78*	
No. maintenance actions at daily	655	260	86	305	34	0	115	
No. maintenance actions at PMP	991	135	95	65	80	35	0	
Personnel nonzer entries	1900	500	135	450	160	80	86	
MTTR distribution	1.5	1.4	1.5	1.3	2.3	1.2	.8	
Off aircraft MTTR	0	0	0	0	0	0	0	
Availability	87.89	91.06	85.94	91.67	74.6	95.14	80.59	
MALF/FH	1.8	1.75	.95	1.36	1.43	.72	.53	

*-Postflights

TABLE XXVIII. Continued

Probability of NORS equals (1 - true probability of NORS)
TOE is essentially infinite for all runs

Output Parameters	Basic A	Basic C	Basic 3	Basic 2	3 A	3 B	2 C	2 B	2 A	Basic B
Total number of missions flown	726	721	267	695	175	300	649	704	537	664
Total number of missions called	756	756	784	756	784	784	756	756	756	756
Total utilization	1086	1078.5	400.5	1042.5	262.5	450.0	973.5	1056.0	805.5	996
Total number of preflight inspections	0	809	0	0	0	0	712	0	0	0
Total number of daily inspections	249	809	17	68	15	28	506*	114	65	305
Total number of PMI inspections	107	567*	15	35	25	234*	11	565*	76	579*
Total number of PMP inspections	27	14	4	12	7	0	0	0	0	1
Total preflight MMH	0	0	0	0	0	0	0	0	0	0
Total daily MMH	0	0	0	0	0	0	0	0	26	0
Total PMI MMH	99.6	340.2*	81.6	326.4	6.00	134.4	303.6*	547.2	665	173.7*
Total PMP MMH	936.25	147.0	178.5	416.5	218.75	70.2*	115.5	169.5*	315	117.0
Total unscheduled maintenance actions	475.50	1029	180.0	540.0	122.5	0	939	667	1204	1374
Total scheduled maintenance actions	1818	1159.9	397	1042	429	204	1155.8	840.52	1464.4	1554.1
Total unscheduled MMH	2249.36	1296.2	493.81	1214	578.52	220.8	1131.1	716.70	1006.0	1754.7
Total scheduled MMH	1508.35	488.6	440.10	1282.9	347.25	204.6	538.8	410.4	450.4	908.5
Total unscheduled EMT	933.0	251.1	112.4	414.6	171.9	123.3	198.3	169.5	560.0	186.7
Total scheduled EMT	855.1		111.4	297.0	168.5	210.3				
Total MMH/FH	3.19	2.15	2.24	2.3	3.2	.92	2.21	1.42	2.74	3.17
Total NORS	1742.5	1329.5	622	1436	816	432.0	1822.6	1074.8	1240.1	2091.0
Total ground abort	0	0	0	0	0	0	0	0	0	0
GSE delay	0	0	0	0	0	0	0	0	0	0
NORS delay	1742	1329	622	1436.1	816	432	1822	1074.8	1240.1	2091
NORM delay	1788.1	739.7	223.8	711.6	340.4	0	737.1	579.9	1010.4	1095.2
Total air aborts	30	37	10	23	0	11	41	30	33	30
No. maintenance actions at preflt	0	0	0	0	0	0	0	0	0	0
No. maintenance actions at aircrew	0	361	0	0	0	0	365	365	0	0
No. maintenance actions inflight	48	0	14	41	18	24	46	58	40	26
No. maintenance actions during PMI	1217	50	152	399	284	77*	146*	186*	850*	185*
No. maintenance actions at daily	261	190*	74	215	19	92	340	393	70	1099
No. maintenance actions at PMP	260	390	145	355	100	0	121	0	210	35
Personnel nonzero entries	800	78	87	311	94	63		220	249	994
MTTR distribution	.88	.83	.87	.84	.88	.79	.87	.82	.86	.81
Off aircraft MTTR	0	0	0	0	0	0	0	0	0	0
Availability	67.25	80.75	58.1	70.94	42.63	62.02	65.37	77.61	69.55	70.36
MAIF/FH	1.67	.95	1.0	1.0	1.64	.43	.95	.64	1.50	1.37

* - Postflights

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TABLE XXIX. HLH VALIDATION - NUMBER OF AIRCRAFT SENSITIVITY

Control Parameter	Expected Value (Baseline)	Output Values			
		Run No. 465 / 6/27	253 / 7/3	256 / 7/3	257 / 7/3
Total number of missions flown	247	247	249	242	187
Total number of missions called	252	252	252	252	252
Total utilization	494	494	498	484	374
Total number of preflight inspections	0	0	0	0	0
Total number of daily inspections	<252	163	219	87	21
Total number of PMI inspections	38	42	43	43	33
Total number of PMP inspections	7	11	10	9	7
Total preflight MMH	0				
Total daily MMH	<151.2	77.8	131.4	52.2	12.6
Total PMI MMH	380.0	420	430.0	430	330
Total PMP MMH	140.0	220	200	180	140
Total unscheduled maintenance actions	1.05 X utilization	515	512	454	334
Total scheduled maintenance actions	=	0	0	0	0
Total unscheduled MMH	-	1575.5	1991.40	1490.4	1749.8
Total scheduled MMH	-	737.8	761.40	662.2	482.6
Total unscheduled EMT	-	353.2	458.9	325.3	333.6
Total scheduled EMT	-	475.5	475.5	426.6	329.7
Total MMH/FH	-	4.45	5.28	4.23	5.60
Total NORS	-	0	0	0	0
Total ground abort	0	0	0	0	0
GSE delay	0	0	0	0	0
NORS delay	0	0	0	0	0
NORM delay	0	828.7	934.4	751.9	663.3
Total air aborts	5.04	5	3	8	10
Number maintenance actions at preflight	(0).(no. mission flown)	0	0	0	0
Number maintenance actions at aircrew		0	0	0	0
Number maintenance actions inflight	(.10).(no. PMI's)	27	32	22	15
Number maintenance actions during PMI	(5).(no. dailies)	235	214	235	178
Number maintenance actions at daily	(.35).(no. dailies)	56	74	33	7
Number maintenance actions at PMP	(18).(no. PMP's)	195	193	157	125
Availability		86.3	87.35	81.35	67.09
Personnel nonzero entries	0	806	933	320	327
MTTR distribution	0	.93	1.1	1.25	1.36
Off aircraft MTTR	0	0	0	0	0
MALF/FH	1.05	1.04	1.03	.94	.89
Number of aircraft		9	11	6	3

TABLE XXX. MLM VALIDATION - NUMBER OF SQUAWKS SENSITIVITY

Control Parameter	Expected Value (Baseline)	Run No. 465 / Date 6/27	Run No. 558 / Date 7/6	Run No. 560 / Date 7/6	Run No. 563 / Date 7/6
Total number of missions flown	247	247	247	246	247
Total number of missions called	252	252	252	252	252
Total utilization	494	494	494	492	494
Total number of preflight inspections	0	0	0	0	0
Total number of daily inspections	252	163	157	149	158
Total number of PMI inspections	38	42	41	43	41
Total number of PMP inspections	7	11	12	10	12
Total preflight MMH	0	0	0	0	0
Total daily MMH	151.2	77.8	94.2	89.4	94.8
Total PMI MMH	380.0	420	410	430	410
Total PMP MMH	140.0	220	240	200	240
Total unscheduled maintenance actions	1.05 X utilization	515	532	456	534
Total scheduled maintenance actions	0	0	0	0	0
Total unscheduled MMH	-	1575.5	2021	1612.2	2050.9
Total scheduled MMH	-	737.8	744.2	719.4	744.8
Total unscheduled EMT	-	353.2	474.1	404.1	501.6
Total scheduled EMT	-	475.5	566.9	432.2	578.2
Total MMH/FH	-	4.45	5.32	4.55	5.40
Total NORS	0	0	0	0	0
Total ground abort	0	0	0	0	0
GSE delay	0	0	0	0	0
NORS delay	0	0	0	0	0
NORM delay	5.04	828.7	1041.0	916.3	1079.8
Total air aborts	0	0	5	6	5
Number maintenance actions at preflight	(.10).(no. mission flown)	0	0	0	0
Number maintenance actions at aircrew	(0)	0	1	1	1
Number maintenance actions inflight	(.10).(no. PMI's)	27	25	20	25
Number maintenance actions during PMI	(.5).(no. PMI's)	235	221	254	221
Number maintenance actions at daily	(.35).(no. dailies)	56	54	43	54
Number maintenance actions at PMP	(18).(no. PMP's)	195	227	133	231
Availability	-	86.3	82.82	84.88	82.17
Personnel nonzero entries	-	806	935	714	895
MTTR distribution	-	.97	1.14	1.01	1.10
Off aircraft MTTR	0	0	0	0	0
MALF/FH	1.05	1.04	1.08	.93	1.08
Maximum number of up squawks		100	10	1	5

TABLE XXXI.   HLH VALIDATION - PMP SENSITIVITY

Control Parameter	Expected Value (Baseline)	Output Values						
Run No		465	155	156	158	334	335	579
Date		6/27	7/3	7/3	7/3	7/5	7/6	7/6
Total number of missions flown	247	247	245	244	246	248	246	245
Total number of missions called	252	252	252	252	252	252	252	252
Total utilization	494	494	490	488	492	496	492	490
Total number of preflight inspections	0	0	0	0	0	0	0	0
Total number of daily inspections	252	163	193	186	176	178	187	185
Total number of PMI inspections	38	42	5	49	14	18	4	50
Total number of PMP inspections	7	11	0	0	6	6	2	0
Total preflight MMH	0	0	0	0	0	0	0	0
Total daily MMH	151.2	77.8	115.8	111.6	105.6	106.80	112.20	111
Total PMI MMH	380.0	420	50	490	140.0	180.0	40.0	500
Total PMP MMH	140.0	220			120.0	120.0	40.0	
Total unscheduled maintenance actions	1.05 X utilization	515	116	363	291	289	158	356
Total scheduled maintenance actions	–							
Total unscheduled MMH	–	1572.5	438.9	1271.3	1231.5	1339.2	701.3	1307.8
Total scheduled MMH	–	747.8	265.80	601.6	365.6	406.8	192.2	611.0
Total unscheduled EMT	–	353.2	109.6	314.7	286.1	250.8	208.1	350.9
Total scheduled EMT	–	474.5	28.0	336.6	194.8	212.3	48.0	344.1
Total MMH/FH	–	4.45	1.21	3.77	3.13	3.41	1.77	3.86
Total NORS	0	0	0	0	0	0	0	0
Total ground abort	0	0	0	0	0	0	0	0
GSE delay	0	0	0	0	0	0	0	0
NORS delay	0	0	0	0	0	0	0	0
NORM delay	–	828.7	133.6	651.3	481.1	463.1	256.3	695.0
Total air aborts	5.04	5	7	8	6	4	6	7
Number maintenance actions at preflight	(0)	0	0	0	0	0	0	0
Number maintenance actions at aircrew	(.10).(no. PMI's)	0	0	0	0	1	0	0
Number maintenance actions inflight		27	19	27	22	23	27	17
Number maintenance actions during PMI	(5).(no. dailies)	235	29	270	76	95	21	272
Number maintenance actions at daily	(.35).(no. dailies)	56	61	58	69	53	72	60
Number maintenance actions at PMP	(18).(no. PMP's)	195		0	119	114	34	
Availability	–	86.3	97.2	89.26	92.04	92.34	95.76	88.5
Personnel nonzero entries	–	806	18	496	507	485	268	450
MTTR distribution	–	.93	1.17	1.05	1.24	1.30	1.66	1.10
Off aircraft MTTR	0	0	0	0	0	0	0	0
MALF/FH	1.05	1.04	.24	.74	.59	.58	.32	.73
PMP interval (hrs)		50.0	800.0	300.0	100.0	100.0	800.0	300.0
PMI interval (hrs)		10.0	100.0	10.0	25.0	25.0	100.0	10.0

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TABLE XXXII. HLH VALIDATION - PERSONNEL SENSITIVITY

Control Parameter	Expected Value (Baseline)	Output Values — Run No.					
		465	906	907	81	72	70
		Date 6/27	6/28	6/28	6/28	6/28	6/28
Total number of missions flown	247	247	246	245	245	246	245
Total number of missions called	252	252	252	252	252	252	252
Total utilization	494	494	492	490	490	492	490
Total number of preflight inspections	0	0	0	0	0	0	0
Total number of daily inspections	252	163	180	171	138	163	166
Total number of PMI inspections	38	42	42	42	43	42	41
Total number of PMP inspections	7	11	10	10	11	10	11
Total preflight MMH	<151.2	0	0	0	0	0	0
Total daily MMH	380.0	97.8	108.0	102.6	82.8	97.8	99.6
Total PMI MMH	140.0	420	420	420	430	420	410
Total PMP MMH	1.05 X utilization	220	200	200	220.0	200	220
Total unscheduled maintenance actions	-	515	518	501	458	501	478
Total scheduled maintenance actions	-	0	0	0	0	0	0
Total unscheduled MMH	-	1575.5	2269.9	2391.2	1379.4	1700.4	1667.8
Total scheduled MMH	-	737.8	728	722.6	732.8	717.8	729.6
Total unscheduled EMT	-	353.2	440.2	516.8	683.6	452.0	401.3
Total scheduled EMT	-	475.5	402.0	420.1	690.5	452.9	459.1
Total MMH/FH	-	4.45	5.80	6.02	4.08	4.66	4.63
Total NORS	0	0	0	0	0	0	0
Total ground abort	0	0	0	0	0	0	0
GSE delay	0	0	0	0	0	0	0
NORS delay	0	0	0	0	0	0	0
NORM delay	0	828.7	842.2	937.1	1374.1	984.9	860.4
Total air aborts	5.04	5	6	7	7	6	7
Number maintenance actions at preflight	(0): (no.missions flown)	0	0	0	0	0	0
Number maintenance actions at aircrew	(.10): (no.PMI's)	27	43	0	0	20	0
Number maintenance actions inflight	(5): (no.PMI's)	235	224	29	28	232	25
Number maintenance actions during PMI	(.35): (no.dailies)	56	76	228	197	58	206
Number maintenance actions at daily	(18): (no.PMP's)	195	170	62	45	190	62
Number maintenance actions at PMP	-			178	182		180
Availability	-	66.3	86.1	84.5	77.31	83.7	85.77
Personnel nonzero entries	-	806	111	350	1088	630	965
MTTR distribution	-	.93	1.199	1.26	.95	.99	1.03
Off aircraft MTTR	-						
MALF/FH	1.05	1.04	1.05	1.02	.93	1.02	.98
Total TOE		36	360	100	24	36	36
Personnel types 01, 02 - first shift		13,6,	90,90,	25,25,	6,6,	9,9,	18,6,
Personnel types 01, 02 - second shift		11,6	90,90	25,25	6, 6	9,9	6,6

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APPENDIX II
INPUT CHANGES FOR COMPARATIVE ANALYSES

CH-47C

Tables XXXIII through XXXVI identify the various alternate mission/maintenance concept combinations simulated for the CH-47C comparative analyses.

HLH

Tables XXXVII through XXXIX identify the alternate missions employed in the HLH comparative analysis.

Tables XL through XLIII contain the alternate maintenance concepts used in the analysis.

All combinations of runs made in the HLH analyses can be reproduced by combining the proper mission/maintenance concept alternatives.

TABLE XXXIII. CH-47C ALTERNATE MAINTENANCE CONCEPTS - BASIC MISSION

```
     MISSION BASIC MAINTENANCE CONCEPT A

2    00010010     200154                                          00025100
 18     FUNCTION   041,52                                         00027700
0.50031   0.00002                                                 00027700
0.50035   0.000010    0.750013    0.009029    0.000025            00029500
        CH-47  MAINT CONCEPT A  -DAILY,10 40,55 40 PPI   ...........05165500
        INITIAL  441(1,8),70                            ...........05165501
        INITIAL  441(1,9),55                            ...........05165502
        INITIAL  441(8,1),25                            ...........05165503
        INITIAL  441(5,1),70                            ...........05165504
        INITIAL  441(10,1),25                           ...........05165505
        INITIAL  441(11,1),35                           ...........05165506
        INITIAL  4100,500                               ...........05165507
        INITIAL  4103,190                               ...........05165508
        INITIAL  446(12,1-10),10500                                05165500

     MISSION BASIC MAINTENANCE CONCEPT B

1    .0000002     0000005     0100000     75000011   0000001a   25000000025400
 90     FUNCTION   041,52                                         00151000
0.50002   0.00005                                                 00151100
                                                                  00151200
        CH-47C MAINT, CONCEPT B  -30 WEEK CALENDAR INSP.  ...........05165500
        INITIAL  4100,30500                            ...........05165501
        INITIAL  4105,420                             ...........05165502
        INITIAL  441(1,8),60                           ...........05165503
        INITIAL  441(8,1),90                           ...........05165504
        INITIAL  441(5,1),135                          ...........05165505
        INITIAL  441(10,1),10                          ...........05165506
        INITIAL  441(11,1),5                           ...........05165507
        INITIAL  441(1,9),135                          ...........05165508
        INITIAL  441(1,9),5                            ...........05165509
        INITIAL  4106,7                                ...........05165511
        INITIAL  4105,250                              ...........05165512

     MISSION BASIC MAINTENANCE CONCEPT C

1    0003002      5553005     0100000     75000011   0000001a  00000005025400
2    25010510     500190                                         00025100
 95     FUNCTION   041,52                                         05151000
0.00005   0.00005                                                 05151100
                                                                  05151205
        CH-47C  MAINT  CONCEPT  C                                 05165505
        INITIAL  4100,1000                                        00165501
        INITIAL  4105,20                                          00165502
        INITIAL  441(1,8),30000                                   00165503
        INITIAL  441(8,1),10                                      05165504
        INITIAL  441(5,1),55                                      05165505
        INITIAL  441(10,1),20                                     00165506
        INITIAL  441(11,1),5                                      05165507
        INITIAL  441(1,9),55                                      00165508
        INITIAL  441(1,9),5                                       05165509

     MISSION BASIC MAINTENANCE CONCEPT D

1    .0000002     0000005     0100000     75000011   0000001a  25000000025400
 95     FUNCTION   041,52                                         00151000
0.50002   0.00005                                                 05151105
                                                                  05151200
        INITIAL  4100,30000                                       05165501
        INITIAL  4105,20                                          05165502
        INITIAL  441(1,8),185                                     05165503
        INITIAL  441(9,1),245                                     05165504
        INITIAL  441(5,1),100                                     05165505
        INITIAL  441(10,1),95                                     00165506
        INITIAL  441(11,1),20                                     00165507
        INITIAL  441(1,9),105                                     00165508
        INITIAL  441(1,9),5                                       00165500
        INITIAL  4106,5                                           00165510
        INITIAL  4105,110                                         00165511
```

TABLE XXXIV.   CH-47C ALTERNATE MAINTENANCE CONCEPTS - MISSION 1

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TABLE XXXV. CH-47C ALTERNATE MAINTENANCE CONCEPTS - MISSION 2

MISSION 2   MAINTENANCE CONCEPT BASIC

MISSION 2   MAINTENANCE CONCEPT A

MISSION 2   MAINTENANCE CONCEPT B

MISSION 2   MAINTENANCE CONCEPT C

TABLE XXXVI.   CH-47C ALTERNATE MAINTENANCE CONCEPTS - MISSION 3

```
        MISSION 3      MAINTENANCE CONCEPT BASIC
*
*       CH-47 MISSION 3 - 100 HRS/AC- FT.RUCKER- LEAD THE FLEET      ********00165001
*       3 A/C PER SITE-NO STANDBY                                    ********00165002
        INITIAL   441(1-10,10),1              MISSION 3,BASIC        ********00165003
        INITIAL   441(10,5),1                                        ********00165004
        INITIAL   441(10,11),15                                      ********00165005
        INITIAL   441(1,12),10                                       ********00165006
        INITIAL   K100,1                                             ********00165007
        INITIAL   441(1,15),0                                        ********00165008
        INITIAL   K101,3                                             ********00165009
        INITIAL   K102,5                                             ********00165011
        INITIAL   K103,480                                           ********00165012
        INITIAL   441(2,12),35                                  ************00165013
*
        MISSION 3      MAINTENANCE CONCEPT A
*
2       00010016      200102                                              00025100
 12     FUNCTION      RV1,32                                               00027600
0.50001       0.99992                                                      00027700
0.50005       0.600010    0.700013    0.800020    0.999925                00028500
*       CH-47 MISSION 3 - 100 HRS/AC- FT.RUCKER- LEAD THE FLEET      ********00165001
*       3 A/C PER SITE-NO STANDBY                                    ********00165002
        INITIAL   441(1-10,10),1              MISSION 3,A           ********00165003
        INITIAL   441(10,5),1                                        ********00165004
        INITIAL   441(10,11),15                                      ********00165005
        INITIAL   441(1,12),10                                       ********00165006
        INITIAL   K100,1                                             ********00165007
        INITIAL   441(1,15),0                                        ********00165008
        INITIAL   K101,3                                             ********00165009
        INITIAL   K102,5                                             ********00165011
        INITIAL   K103,480                                           ********00165012
        INITIAL   441(2,12),35                                  ************00165013
*       CH-47  MAINT CONCEPT A  -DAILY,10 HR,50 HR PPI          ************00165500
        INITIAL   4K1(1,8),70                                   ************00165501
        INITIAL   4K1(1,9),35                                   ************00165502
        INITIAL   4K1(2,1),25                                   ************00165503
        INITIAL   4K1(3,1),70                                   ************00165504
        INITIAL   4K1(10,1),25                                  ************00165505
        INITIAL   4K1(11,1),35                                  ************00165506
        INITIAL   K159,500                                      ************00165507
        INITIAL   K193,100                                      ************00165509
        INITIAL   446(-12,1-18),33000        MISSION 3,A       ********00165500
*
        MISSION 3      MAINTENANCE CONCEPT B
*
1       .9993992      9999995    9993998    75000011    99999916    25000000023400
 56     FUNCTION      RV1,32                                               00151000
0.50004       0.99995                                                      00151100
*                                                                          00151200
*       CH-47 MISSION 3 - 100 HRS/AC - FT.RUCKER- LEAD THE FLEET     ********00165001
*       3 A/C PER SITE-NO STANDBY                                    ********00165002
        INITIAL   441(1-10,10),1              MISSION 3,B           ********00165003
        INITIAL   441(10,5),1                                        ********00165004
        INITIAL   441(10,11),15                                      ********00165005
        INITIAL   441(1,12),10                                       ********00165006
        INITIAL   K100,1                                             ********00165007
        INITIAL   441(1,15),0                                        ********00165008
        INITIAL   K101,3                                             ********00165009
        INITIAL   K102,5                                             ********00165011
        INITIAL   K103,480                                           ********00165012
        INITIAL   441(2,12),35                                  ************00165013
```

TABLE XXXVI.   Continued

```
•       CH-47C   MAINT  CONCEPT  3:                                    00165500
        INITIALI   X189,1000                                          00165501
        INITIALI   X190,20                                            00165502
        INITIALI   4X1(1,2),30000                                     00165503
        INITIALI   4X1(2,1),30                                        00165504
        INITIALI   4X1(3,1),35                                        00165505
        INITIALI   4X1(10,1),20                                       00165506
        INITIALI   4X1(11,1),3                                        00165507
        INITIALI   4X1(1,8),35                                        00165508
        INITIALI   4X1(1,9),3                                         00165509
•
    MISSION 3       MAINTENANCE  CONCEPT  0
1    .0000002      0000005       0000008      73008011    0000008   25000000023000
58.  FUNCTION   8V1,32                                                00151000
0.50002    0.00005                                                   00151100
•                                                                     00151200
•       CH-47 MISSION 3 = 100 HRS/MO= FT.RUCKER= LEAD THRU FLEET       ••••••••00165801
•       3 A/C PER SITE=NO STANDBY                                      ••••••••00165802
        INITIALI   4M1(1-10,10),1            MISSION 3,BASIC         ••••••••00165803
        INITIALI   4M1(10,5),1                                        ••••••••00165804
        INITIALI   4M1(10,11),15                                      00165805
        INITIALI   4M1(1,12),10                                       00165806
        INITIALI   X196,1                                             00165807
        INITIALI   4M1(1,15),0                                        00165808
        INITIALI   X191,3                                             00165809
        INITIALI   X192,5                                             00165811
        INITIALI   X193,400                                           00165812
        INITIALI   4M1(2,12),35                                       00165813
        INITIALI   X189,30000                                         00165801
        INITIALI   X190,20                                            00165802
        INITIALI   4X1(1,2),105                                       00165803
        INITIALI   4X1(2,1),240                                       00165804
        INITIALI   4X1(3,1),100                                       00165805
        INITIALI   4X1(10,1),90                                       00165806
        INITIALI   4X1(11,1),20                                       00165807
        INITIALI   4X1(1,8),100                                       00165808
        INITIALI   4X1(1,9),3                                         00165809
        INITIALI   X196,3                                             00165810
        INITIALI   X195,110                                           00165811
```

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TABLE XXXVII. HLH ALTERNATE MISSION 1

```
•••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••00103510
• MISSION # 1 • 3 A/C • HLH • NO STANDBY REQUIRED••••••••••••••••••••00103520
•••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••00103530
       INITIAL!   MM1(1-10,9),1/MM1(1-10,10),1                        00103600
       INITIAL!   MM1(1,11),70/MM1(2-10,11),10/MM1(1,12),10           00103700
       INITIAL!   MM1(2,12),80/MM1(3,12),0/MM1(6,12),8               00103800
       INITIAL!   MM1(1,15),0/MM1(2,16),2                             00103900
       INITIAL!   X101,<3                                             00105100
       INITIAL!   X104,<1                                             00105700
```

TABLE XXXVIII. HLH ALTERNATE MISSION 2

```
• 0000002    0000005    0000008    00008111   0000016   95000000023600
•••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••00103510
• MISSION # 2 • 9 A/C • 1 STANDBY REQUIRED••••••••••••••••••••••••••06103520
•••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••00103530
       INITIAL!   MM1(1-2,9),1/MM1(1-2,10),3                          00103600
       INITIAL!   MM1(1,11),80/MM1(2,11),60/MM1(1,12),2              00103700
       INITIAL!   MM1(2,12),120/MM1(3,12),0/MM1(6,12),8              00103800
       INITIAL!   X104,<3                                             00105700
```

TABLE XXXIX. HLH ALTERNATE MISSION 3

```
•••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••00103510
• MISSION # 3 • 9/A/C • HLH • STANDBY REQUIRED••••••••••••••••••••••00103520
•••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••00103530
       INITIAL!   MM1(1-10,9),1/MM1(1-5,10),0/MM1(6-10,10),5         00103600
       INITIAL!   MM1(1,11),70/MM1(2-10,11),10/MM1(1,12),10          00103700
       INITIAL!   MM1(2,12),80/MM1(3,12),0/MM1(6,12),8              00103800
       INITIAL!   MM1(6,6),30000/MM1(1,21),263                       00105010
```

TABLE XL. HLH ALTERNATE MAINTENANCE CONCEPT A

```
2      00010016      000150                                          00025100
 10.   PUNCTION    RN1,32                                            00020400
0.500044    0.999955                                                00020500
 0                                                                   00020600
 0                                                                   00020700
 0                                                                   00020860
 
 55.   PUNCTION    RN1,32                                            00103200
0.500015    0.999916                                                00103300
 0                                                                   00103400
 00000000000000000000000000000000000000000000000000000000000000000000103310
 0   MAINTENANCE CONCEPT- ALTERNATE A - 100 HR PMP 25 HR PMI -HLH-00104320
 00000000000000000000000000000000000000000000000000000000000000000000104330
      INITIALI    4X1(1,2),220/4X1(2,1),80/4X1(3,1),80/4X1(5,1),6720   00104400
      INITIALI    4X1(10,1),40/4X1(4,6),30000                         00104600
      INITIALI    4X1(11,1),40                                         00104600
      INITIALI    4X1(1,8),80/4X1(1,9),40/4X1(1,10),3                  00104700
      INITIALI    X100,X1000                                           00104900
      INITIALI    X100,X850                                            00105000
      INITIALI    4M6(16,1-3),1200/4M6(16,4-6),2400/MM6(16,7-10),1200  00105600
      INITIALI    4M6(16,11),800/4M6(17,1),2137/MM6(17,2),2121         00105610
      INITIALI    4M6(17,3),2106/4M6(17,4),2146/MM6(17,5),2147         00105620
      INITIALI    4M6(17,6),2130/4M6(17,7),1918/MM6(17,8),1913         00105630
      INITIALI    4M6(17,9-10),1932/MM6(17,11),0402                    00105640
      INITIALI    4M6(18,1-11),0                                       00105650
```

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TABLE XLI. HLH ALTERNATE MAINTENANCE CONCEPT B

```
*        CHANGES TO INCORPORATE CALENDAR INSPECTION/INTERVALS        00002710
13       VARIABLE   (RV1+1000+RV1)*X195   INITIAL DAYS SINCE PMP     00002800
11       VARIABLE   (P47+(C1/240))*X195   DAYS SINCE PMP             00002900
236      VARIABLE   X195-X196             PMP CALENDAR WINDOW        00019010
1        9999992   5500005    9999998    25000011   99999916  25000000023400
17       00000121  999999                                           00023500
2        00010016  230113                                           00025100
18       FUNCTION  RV1,32                                           00028400
0.500050      0.999951                                              00028500
*                                                                   00028600
*                                                                   00028700
*                                                                   00028800
56       FUNCTION  RV1,32                                           00103200
0.60002       0.99903                                              00103300
*                                                                   00103400
*        MAINTENANCE CONCEPT -ALTERNATE B  - 36 WEEK CAL.INSP.     00104310
*...................................................................00104320
         INITIAL   MX1(1,2),220/MX1(2,1),130/MX1(3,1),150/MX1(5,1),6720  00104400
         INITIAL   MX1(10,1),20/MX1(8,6),30000                    00104500
         INITIAL   MX1(11,1),3                                    00104600
         INITIAL   MX1(1,8),150/MX1(1,9),5/MX1(1,10),3            00104700
         INITIAL   X189,<30000                                    00104800
         INITIAL   X190,<20                                       00105000
         INITIAL   MH6(16,1-3),1200/MH6(16,4-6),2400/MH6(16,7-10),1200  00105600
         INITIAL   MH6(16,11),503/MH6(17,1),2157/MH6(17,2),2121   00105610
         INITIAL   MH6(17,3),2135/MH6(17,4),2146/MH6(17,5),2147   00105620
         INITIAL   MH6(17,6),2133/MH6(17,7),1914/MH6(17,8),1915   00105630
         INITIAL   MH6(17,9-10),1932/MH6(17,11),0402              00105640
         INITIAL   MH6(18,1-11),8                                 00105650
         INITIAL   X188,4                                         0310570
         INITIAL   X196,7                                         00105710
         INITIAL   X195,238                                       00105720
         TEST L    V11,V236,AR417   TEST FOR CALENDAR PMP         00122810
         TEST L    V11,V236,MLM21   TEST FOR CALENDAR PMP         00141410
         TEST L    V11,V236,MLM5    TEST FOR CALENDAR PMP         00143010
         ASSIGN    87,0   ZERO JOT TIME SINCE LAST CALENDAR INSPECTION  00160310
         TEST L    V11,V236,AR417   TEST FOR CALENDAR PMP         00177510
         TEST L    V11,V236,AR417   TEST FOR CALENDAR PMP         00200610
```

TABLE XLII. HLH ALTERNATE MAINTENANCE CONCEPT C

```
1      9999992      5500005      9999998    28000111    9999916    9999990002340
17     00090121     999999                                         00083500
8      28010616     000100                                         00025100
18.    PUNCTION     RM1,58                                         00028400
0.500036     0.999985                                             00028500
8                                                                  00028600
8                                                                  00028700
8                                                                  00028800
58.    PUNCTION     RM1,58                                         00103200
0.90001     0.99992                                               00103300
8                                                                  00103400
8•••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••00104310
8   MAINTENANCE CONCEPT •ALTERNATE• C • PHASED 100 HR PMP •POST/PRE PLBHT00104320
8•••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••00104330
       INITIALI     MX1(1,2),30000/MX1(2,1),30/MX1(3,1),40/MX1(5,1),6720  00104400
       INITIALI     MX1(10,1),20/MX1(4,6),39000                 00104500
       INITIALI     MX1(11,1),5                                 00104600
       INITIALI     MX1(1,8),40/MX1(1,9),5/MX1(1,10),5          00104700
       INITIALI     K189,K1000                                 00104900
       INITIALI     K190,K20                                   00105000
```

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TABLE XLIII.   HLH ALTERNATE MAINTENANCE CONCEPT D

```
*      CHANGES TO INCORPORATE CALENDAR INSPECTION/INTERVALS                         00002710
 19    VARIABLE  (RN1+1000+HN1))*X195  INITIAL  DAYS SINCE PMP                       00002800
 11    VARIABLE  (P47+(C1/240))*X195   DAYS SINCE PMP                                00002900
 236   VARIABLE  X195-X196             PMP CALENDAR WINDOW                           00019010
 1     0000002   5500005     0002998     75000011    0000010    75000000023400
 17    00000121  999999                                                             00023500
 2     20010316  200112                                                             00025100
 18    FUNCTION   RN1,32                                                            00028400
0.500004    0.999945                                                                00028500
 *                                                                                  00028600
 *                                                                                  00028700
 *                                                                                  00028800
 56.   FUNCTION   RN1,32                                                            00103200
0.50001    0.99992                                                                  00103300
 *                                                                                  00103400
 *     MAINT. CONCEPT  ALR, D  17 WEEK PMP                                          00104310
       INITIAL  4X1(1,2),220/4X1(2,1),100/4X1(3,1),120/HX1(5,1),6720               00104400
       INITIAL  4X1(10,1),20/4X1(4,6),30000                                        00104500
       INITIAL  4X1(11,1),3                                                        00104600
       INITIAL  4X1(1,8),120/4X1(1,9),5/4X1(1,10),3                                00104700
       INITIAL  X199,<30000                                                        00104900
       INITIAL  X190,<20                                                           00105000
       INITIAL  4H6(16,1-3),2300/4H6(16,4-6),5000/4H6(16,7-10),2000               00105600
       INITIAL  4H6(16,11),2430/4H6(17,1),2157/4H6(17,2),2121                     00105610
       INITIAL  4H6(17,3),2105/4H6(17,4),2106/4H6(17,5),2107                      00105620
       INITIAL  4H6(17,6),2135/4H6(17,7),1918/4H6(17,8),1915                      00105630
       INITIAL  4H6(17,9),1932/4H6(17,10),1932/4H6(17,11),0402                    00105640
       INITIAL  4H6(19,1-11),3                                                     00105650
       INITIAL  X196,7                                                            00105720
       INITIAL  X195,119                                                          00105720
       TEST L   V11,V236,AR417      TEST FOR CALENDAR PMP                          00122010
       TEST L   V11,V236,4L421      TEST FOR CALENDAR PMP                          00141410
       TEST L   V11,V236,4L45       TEST FOR CALENDAR PMP                          00143010
       ASSIGN   47,0                                                              00160310
       TEST L   V11,V236,AR417      TEST FOR CALENDAR PMP                          00177510
       TEST L   V11,V236,AR417      TEST FOR CALENDAR PMP                          00200610
```

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APPENDIX III
RESULTS OF COMPARATIVE ANALYSES

Tables XLIV and XLV summarize the results of the CH-47C and HLH maintenance concept comparative analyses. Discussion and analysis of these data are contained in the Comparative Analysis section.

CH-47C

Twenty simulations were run for the CH-47C comparative analysis. These computer runs were typical of all maintenance concept/mission profile combinations.

HLH

Twenty simulations were run for the HLH comparative analysis. These computer runs were representative of all maintenance concept/mission profile combinations.

TABLE XLIV. CH-47 COMPARATIVE ANALYSES

Output Parameters	BASIC	BASIC MISSION: 16 AIRCRAFT, 1.5 HOURS/FLIGHT, 1512 FLIGHTS SCHEDULED				Maintenance Concept
		A	B	C	D	
1 Total number of missions demanded	1512	1512	1512	1512	1512	
2 Total number of missions completed	1345	1432	1438	1229	1278	
3 Total utilization	2017.5	2148.0	2157.0	1843.5	1917.0	
4 Total number of preflight inspections	0	0	0	1318	1392	
5 Total number of daily inspections	635	549	568	0	404	
6 Total number of PMI inspections	67	182	1139	949	996	
7 Total number of PMP inspections	19	51	0	19	7	
8 Total preflight MMH	0	0	0	1318.00	835.2	
9 Total daily MMH	3048.0	219.60	2726.4	0	808.0	
10 Total PMI MMH	797.3	1592.5	341.7	569.40	3984.0	
11 Total PMP MMH	855.0	892.5	234.0	199.50	630.0	
12 Total unscheduled maintenance actions	2568	2521	2857	2548	2707	
13 Total scheduled maintenance actions	55	53	33	54	114	
14 Total unscheduled MMH	3268.71	3219.58	3806.0	3504.35	3469.64	
15 Total scheduled MMH	5284.5	3382.25	3621.63	734.43	7203.23	
16 Total unscheduled EMT	3531.1	4015.9	4396.1	3673.7	5117.0	
17 Total scheduled EMT	621.3	1435.1	598.4	720.5	4269.2	
18 Total MMH/FH	4.07	2.9	3.3	2.9	5.38	
19 NORM delay	4152.4	5451.0	4994.5	4393.2	9386.2	
20 Total air aborts	64	71	70	59	52	
21 No. maintenance actions inflight abort	65	75	71	60	52	
22 No. maintenance actions at preflight	0	0	0	669	635	
23 No. maintenance actions inflight	68	104	112	77	90	
24 No. maintenance actions during PMI	423	1224	717	419	528	
25 No. maintenance actions at daily	739	523	1803	0	920	
26 No. maintenance actions at PMP	1233	595	154	1323	482	
27 Personnel delays	6044	3389	1556	5091	4530	
28 Malfunctions per Flight Hour	1.3	1.2	1.3	1.4	1.4	
29 Availability	80.69	74.65	76.77	80.04	56.35	
Index of merit	.81	.86	.86	.76	.76	

I.O.M. = (2/1) . (.75) + (29) . (.15) + (18) -1 . (.10)

Maintenance Concepts

Basic: Daily, intermediate (25 hour PMI), periodic (100 hour PMP)
A: Firm (daily), 10-hour inspection (PMI), phased periodic (50 hour PMP)
B: Turnaround/servicing (PMI), daily, calendar - periodic (PMP)
C: Preflight, postflight (PMI), phased inspection (PMP)
D: preflight, postflight (PMI), daily, calendar - periodic (PMP)

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TABLE XLIV. Continued

MISSION 1: 16 AIRCRAFT, 1.5 HOURS/FLIGHT, 3920 FLIGHTS SCHEDULED

	Output Parameters	BASIC	A	B	C	D	Maintenance Concept
1	Total number of missions demanded	3920	3920	3920	3920	3920	
2	Total number of missions completed	2289	2385	2398	2602	1713	
3	Total utilization	3433.5	3577.5	3597.0	3903	2569	
4	Total number of preflight inspections	0	0	0	2774	1803	
5	Total number of daily inspections	416	678	446	0	390	
6	Total number of PMI inspections	111	307	1859	1990	1324	
7	Total number of PMP inspections	33	77	2	40	7	
8	Total preflight MMH	0	0	0	2774	1081.8	
9	Total daily MMH	1996.8	271.2	2140.8	0	780.0	
10	Total PMI MMH	1320.9	2686.25	557.7	1194	5296.0	
11	Total PMP MMH	1485.0	1347.50	234.0	420	630.0	
12	Total unscheduled maintenance actions	4382	4322	4956	4703	3500	
13	Total scheduled maintenance actions	84	78	33	101	114	
14	Total unscheduled MMH	5845.17	5829.81	6458.52	6316.65	4359.94	
15	Total scheduled MMH	6060.11	5334.66	3459.82	5373.74	8941.95	
16	Total unscheduled EMT	7746.9	8331.7	9124.3	5614.0	5926.2	
17	Total scheduled EMT	1392.9	2817.9	1620.0	4265.7	6230.0	
18	Total MMH/FH	3.3	3.0	2.7	2.87	5.02	
19	NORM delay	9139.8	11149.6	10744.3	9879.7	12156.2	
20	Total air aborts	109	113	120	119	68	
21	No. maintenance actions inflight abort	110	118	120	121	68	
22	No. maintenance actions at preflight	0	0	0	671	813	
23	No. maintenance actions inflight	177	172	171	179	135	
24	No. maintenance actions during PMI	743	2018	2954	959	725	
25	No. maintenance actions at daily	1011	539	1547	0	1367	
26	No. maintenance actions at PMP	2341	1475	164	2773	392	
27	Personnel delays	7701	6951	3841	8499	6715	
28	Malfunctions per Flight Hour	1.3	1.2	1.4	1.2	1.4	
29	Availability	57.49	48.15	50.03	54.05	43.47	
	Index of merit	.55	.56	.57	.61	.41	

I.O.M = (2/1) · (.75) + (.15) + (30) + (18) -1 · (.10)

Maintenance Concepts

Basic: Daily, intermediate (25 hour PMI), periodic (100 hour PMP)
A: Firm (daily), 10-hour inspection (PMI), phased periodic (50 hour PMP)
B: Turnaround/servicing (PMP), daily, calendar - periodic (PMP)
C: Preflight, postflight (PMI), phased inspection (PMP)
D: Preflight, postflight (PMI), daily, calendar - periodic (PMP)

TABLE XLIV. Continued

	MISSION 2: 11 AIRCRAFT, 1.5 HOURS/FLIGHT, 504 FLIGHTS SCHEDULED					
Output Parameters	BASIC	A	B	C	D	Maintenance Concept
1 Total number of missions demanded	504	504	504	504	504	
2 Total number of missions completed	473	483	477	483	470	
3 Total utilization	709.5	726.5	715.5	726.5	705	
4 Total number of preflight inspections	0	0	0	517	496	
5 Total number of daily inspections	371	264	502	0	335	
6 Total number of PMI inspections	21	63	373	379	366	
7 Total number of PMP inspections	10	19	2	10	6	
8 Total preflight MMH	0	0	0	517.00	297.6	
9 Total daily MMH	1780.8	105.6	2409.6	0	670.0	
10 Total PMI MMH	249.9	551.25	111.9	227.4	1464.0	
11 Total PMP MMH	450.0	332.50	234.0	105.0	540.0	
12 Total unscheduled maintenance actions	1078	853	976	900	953	
13 Total scheduled maintenance actions	37	22	33	37	98	
14 Total unscheduled MMH	1478.3	1130.57	1342.03	1286.27	1273.03	
15 Total scheduled MMH	2881.47	1150.57	3160.0	1343.15	4101.62	
16 Total unscheduled EMT	791.2	859.7	1980.1	1837.8	1416.4	
17 Total scheduled EMT	190.7	563.5	201.0	210.8	1120.9	
18 Total MMH/FH	5.85	3.0	6.07	3.5	7.38	
19 NORM delay	981.9	1423.2	2181.1	2048.6	2537.3	
20 Total air aborts	28	21	25	21	20	
21 No. maintenance actions inflight abort	28	22	25	21	20	
22 No. maintenance actions at preflight	0	0	0	31	120	
23 No. maintenance actions inflight	31	34	22	27	34	
24 No. maintenance actions during PMI	134	407	272	91	119	
25 No. maintenance actions at daily	135	180	503	0	218	
26 No. maintenance actions at PMP	750	210	154	730	442	
27 Personnel delays	2216	661	771	1582	1709	
28 Malfunctions per flight Hour	1.5	1.2	1.4	1.2	1.4	
29 Availability	93.35	90.37	85.24	86.14	82.63	
Index of merit	.86	.89	.85	.88	.84	

I.O.M. = (2/1) . (.75) + (29) . (.15) + (18) -1 . (.10)

Maintenance Concepts

Basic: Daily, intermediate (25 hour PMI), periodic (100 hour PMP)
A: Firm (daily), 10-hour inspection (PMI), phased periodic (50 hour PMP)
B: Turnaround/servicing (PMP), daily, calendar - periodic (PMP)
C: Preflight, postflight (PMI), phased inspection (PMP)
D: Preflight, postflight (PMI), daily, calendar - periodic (PMP)

TABLE XLIV. Continued

MISSION 3: 3 AIRCRAFT, 1.5 HOURS/FLIGHT, 560 FLIGHTS SCHEDULED

Output Parameters	BASIC	A	B	C	D	Maintenance Concept
1 Total number of missions demanded	560	560	560	560	560	
2 Total number of missions completed	451	485	464	499	386	
3 Total utilization	676.5	727.5	696	748.5	579	
4 Total number of preflight inspections	0	0	0	533	408	
5 Total number of daily inspections	104	136	113	0	116	
6 Total number of PMI inspections	23	52	352	383	300	
7 Total number of PMP inspections	6	15	0	8	1	
8 Total preflight MMH	0	0	0	533.0	244.8	
9 Total daily MMH	499.2	54.4	542.4	0	232.0	
10 Total PMI MMH	273.7	542.5	105.0	229.8	1200.0	
11 Total PMP MMH	270.0	262.5	117.0	84.0	90.00	
12 Total unscheduled maintenance actions	939	882	833	1005	648	
13 Total scheduled maintenance actions	15	15	16	18	16	
14 Total unscheduled MMH	1149.14	1225.71	1180.06	1278.28	988.28	
15 Total scheduled MMH	1142.14	993.38	947.39	1028.92	1950.76	
16 Total unscheduled EMT	676.5	1076.6	1058.3	864.5	1006.4	
17 Total scheduled EMT	203.0	529.9	235.6	444.9	860.9	
18 Total MMH/FH	3.3	2.9	3.0	3.0	4.91	
19 MMH delay	877.5	1606.5	1293.9	1311.4	1867.3	
20 Total air aborts	20	21	15	19	17	
21 No. maintenance actions inflight abort	20	22	15	20	17	
22 No. maintenance actions at preflight	0	0	0	286	91	
23 No. maintenance actions inflight	33	23	24	32	22	
24 No. maintenance actions during PMI	156	409	350	111	209	
25 No. maintenance actions at daily	238	193	377	0	242	
26 No. maintenance actions at PMP	492	235	67	556	87	
27 Personnel delays	1056	623	343	1175	456	
28 Malfunctions per Flight Hour	1.4	1.2	1.2	1.3	1.2	
29 Availability	78.23	60.15	67.9	57.47	53.68	
Index of merit	.75	.77	.76	.81	.62	

$$I.O.M = (2/1) \cdot (.75) + (29) \cdot (.15) + (18) \cdot (.15) + (18) -1 \cdot (.10)$$

Maintenance Concepts
  Basic: Daily, intermediate (25 hour PMI), periodic (100 hour PMP)
  A: Firm (daily), 10-hour inspection (PMI), phased periodic (50 hour PMP)
  B: Turnaround/servicing (PMI), daily, calendar - periodic (PMP)
  C: Preflight, postflight (PMI), phased inspection (PMP)
  D: Preflight, postflight (PMI), daily, calendar, calendar - periodic (PMP)

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TABLE XLV. HLH COMPARATIVE ANALYSES

BASIC MISSION: 9 AIRCRAFT, 2.0 HOURS/FLIGHT, 504 FLIGHTS SCHEDULED

	Output Parameters	BASIC	A	B	C	D	Maintenance Concept
1	Total number of missions demanded	504	504	504	504	504	
2	Total number of missions completed	492	451	463	489	474	
3	Total utilization	984	902	926	978.0	948	
4	Total number of preflight inspections	0	0	0	565	548.0	
5	Total number of daily inspections	294	412	340	0	367	
6	Total number of PMI inspections	88	29	472	554	483	
7	Total number of PMP inspections	20	10	2	9	6	
8	Total preflight MMH	176.4	0	0	678.0	548.0	
9	Total daily MMH	880.0	2472.00	884.0	0	880.8	
10	Total PMI MMH	400.0	464.0	283.2	554	483.0	
11	Total PMP MMH	987	640.0	300	108.0	720.0	
12	Total unscheduled maintenance actions		1144	1266	1000	824	
13	Total scheduled maintenance actions	0	0	0	0	0	
14	Total unscheduled MMH	3971.0	4245.6	5541.7	3673.0	3845.5	
15	Total scheduled MMH	1456.4	3576.0	1467.2	1340.0	2631.8	
16	Total unscheduled EMT	1125.4	1231.7	2079.9	1245.0	1334.0	
17	Total scheduled EMT	1011.9	880.5	1536.8	1425.9	1609.5	
18	Total MMH/FH	5.25	8.63	7.42	4.97	6.65	
19	Total NORM delay	2198.3	2112.3	3616.7	2670.9	2943.5	
20	Total air aborts	12	9	14	11	13	
21	No. maintenance actions inflight abort	14	11	14	11	13	
22	No. maintenance actions at preflight	0	0	0	259	231	
23	No. maintenance actions inflight	41	50	43	54	33	
24	No. maintenance actions during PMI	470	436	843	286	172	
25	No. maintenance actions at daily	103	152	265	0	109	
26	No. maintenance actions at PMP	359	495	101	390	266	
27	Personnel delays	1759	2878	1942	1564	1934	
28	Malfunctions per Flight Hour	1.00	1.27	1.37	1.02	.87	
29	Availability	81.85	82.53	70.10	77.91	75.66	
	Index of merit	.87	.81	.81	.86	.83	

$$I.O.M = (2/1) \cdot (.75) \cdot (29) \cdot (.15) + (18) -1 \cdot (.10)$$

HLH Maintenance Concepts

Basic: Firm (daily), 10-hour inspection, 50 hour phased periodic
A: Daily, intermediate (25 hour PMI), periodic (100 hour PMP)
B: Turnaround/servicing (PMI), daily, calendar periodic (34 weeks PMP)
C: Preflight, postflight (PMI), phased inspection (100 hours PMP)
D: Preflight, postflight (PMI), daily, calendar periodic (17 weeks PMP)

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TABLE XLV. Continued

Output Parameters	BASIC	A	B	C	D	Maintenance Concept
			MISSION 1: 3 AIRCRAFT, 2.0 HOURS/FLIGHT, 560 FLIGHTS SCHEDULED			
1 Total number of missions demanded	560	560	560	560	560	
2 Total number of missions completed	354	390	367	326		
3 Total utilization	708	780	734	652	688	
4 Total number of preflight inspections	0	0	0	339	354	
5 Total number of daily inspections	112	115	141	0	141	
6 Total number of PMI inspections	62	25	370	329	347	
7 Total number of PMP inspections	15	8	0	6	0	
8 Total preflight MMH	0	0	0	406.8	354	
9 Total daily MMH	67.2	690	366.6	0	338.4	
10 Total PMI MMH	620.0	400.0	222.0	329.0	347.0	
11 Total PMP MMH	300.0	512	0	72.0	0	
12 Total unscheduled maintenance actions	732	893	807	719	628	
13 Total scheduled maintenance actions		0	0	0	0	
14 Total unscheduled MMH	3089.2	3479.8	3273.0	3031.4	2643.7	
15 Total scheduled MMH	987.2	1602.0	588.6	807.8	1039.4	
16 Total unscheduled EMT	837.5	843.8	944.2	896.3	752.3	
17 Total scheduled EMT	468.4	333.9	217.7	287.6	209.6	
18 Total MMH/FH	5.45	6.31	5.23	5.72	5.27	
19 NORM delay	1305.9	1177.7	1161.9	1183.9	961.9	
20 Total air aborts	11	9	4	7	10	
21 No. maintenance actions inflight abort	12	9	4	7	10	
22 No. maintenance actions at preflight	0	0	0	156	149	
23 No. maintenance actions inflight	36	39	42	32	45	
24 No. maintenance actions during PMI	352	387	653	278	385	
25 No. maintenance actions at daily	46	51	108	0	39	
26 No. maintenance actions at PMP	286	407	0	246	0	
27 Personnel delays	1111	1818	247	668	243	
28 Malfunctions per Flight Hour	1.03	1.14	1.10	1.10	.91	
29 Availability	67.61	70.79	71.18	70.63	76.14	
Index of merit	.59	.64	.62	.56	.59	

I.O.M. = (2/1) . (.75) + (29) . (.15) + (18) -1 . (18) + (18) -1 . (.10)

HLH Maintenance Concepts

Basic: Firm (daily), 10-hour inspection, 50 hour phased periodic
A: Daily, intermediate (25 hour PMI), periodic (100 hour PMP)
B: Turnaround/servicing (PMI), daily, calendar periodic (34 weeks PMP)
C: Preflight, postflight (PMI), phased periodic (100 hours PMP)
D: Preflight, postflight (PMI), daily, calendar periodic (17 weeks PMP)

TABLE XLV. Continued

MISSION 2: 9 AIRCRAFT, 2.0 HOURS/FLIGHT, 336 FLIGHTS SCHEDULED

	Output Parameters	BASIC	A	B	C	D	Maintenance Concept
1	Total number of missions demanded	336	336	336	336	336	
2	Total number of missions completed	332	325	328	326	321	
3	Total utilization	664	650	656	652.0	642	
4	Total number of preflight inspections	0	0	0	398	394	
5	Total number of daily inspections	321	346	340	0	326	
6	Total number of PMI inspections	57	22	337	391	330	
7	Total number of PMP inspections	16	0	0	8	6	
8	Total preflight MMH	0	0	0	477.6	394	
9	Total daily MMH	192.6	2076.0	884.0	0	782.4	
10	Total PMI MMH	570.0	352.0	202.2	391.0	330.0	
11	Total PMP MMH	320.0	384.0	300	96.0	720	
12	Total unscheduled maintenance actions	657	687	814	756	673	
13	Total scheduled maintenance actions	0	0	0	0	0	
14	Total unscheduled MMH	2710.0	2825.3	2953.8	3286.7	2898.1	
15	Total scheduled MMH	1082.6	2812.0	1386.2	964.6	2226.4	
16	Total unscheduled EMT	676.3	751.3	904.0	919.6	830.9	
17	Total scheduled EMT	458.4	208.5	421.6	573.5	801.2	
18	Total MMH/FH	5.44	8.4	6.49	6.3	7.7	
19	NORM delay	1134.7	959.8	1325.6	1493.1	1632.1	
20	Total air aborts	4	9	8	8	11	
21	No. maintenance actions inflight abort	4	9	8	8	11	
22	No. maintenance actions at preflight	0	0	0	172	174	
23	No. maintenance actions inflight	32	20	41	25	21	
24	No. maintenance actions during PMI	305	346	398	174	111	
25	No. maintenance actions at daily	16	26	266	0	92	
26	No. maintenance actions at PMP	300	286	101	377	264	
27	Personnel delays	1241	1715	1098	1134	1283	
28	Malfunctions per Flight Hour	.99	1.06	1.26	1.16	1.05	
29	Availability	90.61	92.06	89.04	87.65	86.5	
	Index of merit	.89	.88	.88	.88	.86	

$$I.O.M = (2/1) \cdot (.75) + (29) \cdot (.15) + (18)^{-1} \cdot (.10)$$

HLH Maintenance Concepts

Basic: Firm (daily), 10-hour inspection, 50 hour phased periodic
A: Daily, intermediate (25 hour PMI), periodic (100 hour PMP)
B: Turnaround/servicing (PMI), daily, calendar periodic (34 weeks PMP)
C: Preflight, postflight (PMI), phased inspection (100 hours PMP)
D: Preflight, postflight (PMI), daily, calendar periodic (17 weeks PMP)

TABLE XLV. Continued

MISSION 3: 9 AIRCRAFT, 5.0 HOURS/FLIGHT, 1120 FLIGHTS SCHEDULED

	Output Parameters	BASIC	A	B	C	D	Maintenance Concept
1	Total number of missions demanded	1120	1120	1120	1120	1120	
2	Total number of missions completed	421	360	368	445	445	
3	Total utilization	2105	1800	1840	2225	2225	
4	Total number of preflight inspections	0	0	0	480	483	
5	Total number of daily inspections	159	167	125	0	204	
6	Total number of PMI inspections	193	61	376	451	453	
7	Total number of PMP inspections	47	2	2	23	6	
8	Total preflight MMH	0	0	0	576.0	483	
9	Total daily MMH	95.4	1002.0	325.0	0	489.6	
10	Total PMI MMH	1930.0	976.0	225.6	451.0	453.0	
11	Total PMP MMH	940.0	1280.0	300	276.0	720.0	
12	Total unscheduled maintenance actions	1999	1885	2303	2465	1907	
13	Total scheduled maintenance actions	0	0	0	0	0	
14	Total unscheduled MMH	6765.7	6953.0	9431.2	8109.4	7471.1	
15	Total scheduled MMH	2965.4	3258.0	850.6	1303.0	2145.6	
16	Total unscheduled EMT	2881.0	2220.3	4879.2	3022.8	3068.4	
17	Total scheduled EMT	4240.1	4927.2	3266.2	2845.3	3255.4	
18	Total MMH/FH	4.14	5.37	5.49	3.99	4.2	
19	MMH delay	7121.1	7147.5	8125.4	5868.1	6323.8	
20	Total air aborts	6	8	11	13	14	
21	No. maintenance actions inflight abort	8	8	11	14	14	
22	No. maintenance actions at preflight	0	0	0	211	231	
23	No. maintenance actions inflight	38	30	31	51	37	
24	No. maintenance actions during PMI	1012	909	1578	1126	525	
25	No. maintenance actions at daily	61	58	632	0	833	
26	No. maintenance actions at PMP	880	880	51	1063	267	
27	Personnel delays	4602	4951	5222	5230	4659	
28	Malfunctions per Flight Hour	.95	1.05	1.25	1.11	1.17	
29	Availability	41.15	40.91	32.82	51.5	47.71	
	Index of merit	.37	.32	.30	.40	.39	

I.O.M. = (2/1) . (.75) + (29) . (.15) + (18) . -1 . (.10)

HLH Maintenance Concepts

Basic: Firm (daily), 10-hour inspection, 50 hour phased periodic
A: Daily, intermediate (25 hour PMI), periodic (100 hour PMP)
B: Turnaround/servicing (PMI), daily, calendar periodic (34 weeks PMP)
C: Preflight, postflight (PMI), phased inspection (100 hours PMP)
D: Preflight, postflight (PMI), daily, calendar periodic (17 weeks PMP)

APPENDIX IV
CH-47C R&M INPUT DATA BASE

Tables XLVI through LVI have been employed in the development of the R&M function tables of the CH47C R&M simulation model.

Included in the data presented in this appendix are all primary and non-primary malfunctions, encountered against the various CH-47C components/subsystems, as well as the maintenance actions against each system. Maintenance actions include things like visual checks and walk around safety checks, which are frequently not accounted as maintenance against a component. Furthermore these tasks do not in themselves impart aircraft operations.

The total malfunction rate used in the simulation excluded maintenance actions. Thus malfunctions are generated at a rate of approximately 1.3 per flight hour.

TABLE XLVI. CH-47C INPUT DATA - AIRFRAME SYSTEM

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Delay
Access panels and doors	0101	On aircraft repair	6.7761	1.62	1	1.62	-	-
		Unsched. removal & replace.	3.6300	1.38	1.2	1.15	-	-
		Scheduled removal	-	-	-	-	-	-
Armor and armament	0102	On aircraft repair	2.4200	0.44	1	0.44	-	-
		Unsched. removal & replace.	0.2420	0.25	1	0.25	-	-
		Scheduled removal	-	-	-	-	-	-
Basic structure	0103	On aircraft repair	107.9329	2.31	1	2.31	-	-
		Unsched. removal & replace.	30.7342	0.90	3.1	0.29	.4840	-
		Scheduled removal	-	-	-	-	-	-
Cargo ramp, door and actuating mechanisms	0104	On aircraft repair	8.7121	1.51	1	1.51	-	-
		Unsched. removal & replace.	2.4200	1.18	2.4	0.49	-	-
		Scheduled removal	-	-	-	-	-	-
Console and instrument panel	0105	On aircraft repair	1.2100	0.40	1	0.40	-	-
		Unsched. removal & replace.	0.2420	1.70	3.4	0.50	-	-
		Scheduled removal	-	-	-	-	-	-
Dynamic absorbers	0106	On aircraft repair	0.2420	0.33	1	0.33	.2420	.2420
		Unsched. removal & replace.	3.6300	5.08	1	5.08	-	-
		Scheduled removal	-	-	-	-	-	-
Entrance doors	0107	On aircraft repair	9.1961	0.81	1	0.81	-	-
		Unsched. removal & replace.	1.6940	0.59	2.7	0.22	-	-
		Scheduled removal	-	-	-	-	-	-
Fairings and cowling	0108	On aircraft repair	116.8842	1.54	1	1.54	-	-
		Unsched. removal & replace.	68.4898	0.59	1.5	0.39	-	-
		Scheduled removal	-	-	-	-	-	-
Flooring	0109	On aircraft repair	7.9861	0.48	1	0.48	-	-
		Unsched. removal & replace.	0.9680	2.05	2.2	0.93	-	-
		Scheduled removal	-	-	-	-	-	-
Hatches	0110	On aircraft repair	2.4200	0.22	1	0.22	-	-
		Unsched. removal & replace.	1.4520	0.70	1.6	0.44	-	-
		Scheduled removal	-	-	-	-	-	-
Window assemblies	0111	On aircraft repair	9.6801	0.39	1	0.39	-	-
		Unsched. removal & replace.	6.5340	3.19	1	3.19	-	-
		Scheduled removal	-	-	-	-	-	-
Work platforms	0112	On aircraft repair	33.6383	0.82	1	0.82	-	-
		Unsched. removal & replace.	15.4881	1.63	1.9	0.86	-	-
		Scheduled removal	-	-	-	-	-	-
Maintenance actions	0113	On aircraft repair	220.4637	0.80	1	0.80	-	-
		Unsched. removal & replace.	4.3560	1.08	1.3	0.83	-	-
		Scheduled removal	-	-	-	-	-	-

TABLE XLVII. CH-47C INPUT DATA - COMMUNICATIONS AND NAVIGATION SYSTEM

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
ADF	0201	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	0.2420	0.31	1.3	0.25		
		Scheduled removal	-	-	-	-		
HF communications	0202	On aircraft repair	0.7260	0.50	1	0.50	-	-
		Unsched. removal & replace.	4.8400	1.43	1.4	1.02		
		Scheduled removal	-	-	-	-		
IFF	0203	On aircraft repair	1.2100	0.72	1	0.72	-	-
		Unsched. removal & replace.	2.1780	0.68	1.2	0.57		
		Scheduled removal	-	-	-	-		
Interphone	0204	On aircraft repair	4.3561	0.88	1	0.88	-	-
		Unsched. removal & replace.	3.3880	0.81	2.3	0.35		
		Scheduled removal	-	-	-	-		
Liaison	0205	On aircraft repair	1.2100	0.73	1	0.73	-	-
		Unsched. removal & replace.	1.6940	1.46	1.5	0.97		
		Scheduled removal	-	-	-	-		
Marker beacon	0206	On aircraft repair	0.7260	0.42	1	0.42	-	-
		Unsched. removal & replace.	0.2420	0.43	2.5	0.17		
		Scheduled removal	-	-	-	-		
OMNI (VOR)	0207	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	2.4200	0.69	1	0.69		
		Scheduled removal	-	-	-	-		
Remote compass	0208	On aircraft repair	0.2420	1.00	1	1.00	-	-
		Unsched. removal & replace.	0.7260	1.00	1.5	0.67		
		Scheduled removal	-	-	-	-		
UHF communication	0209	On aircraft repair	0.7260	0.67	1	0.67	-	-
		Unsched. removal & replace.	5.3240	0.91	1.4	0.65		
		Scheduled removal	-	-	-	-		
VGI	0210	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	0.4840	0.98	1.3	0.75		
		Scheduled removal	-	-	-	-		
Maintenance actions	0211	On aircraft repair	20.3282	0.64	1	0.64	-	-
		Unsched. removal & replace	7.7441	0.68	2.5	0.27		
		Scheduled removal	-	-	-	-		

TABLE XLVIII. CH-47C INPUT DATA - DRIVE SYSTEM

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	MORS Rate
Lubrication	0301	On aircraft repair	3.3880	1.44	1	1.44	.9680	.2420
		Unsched. removal & replace.	14.7621	1.78	1.4	1.27		
		Scheduled removal	-	-	-	-		
Mounts and supports	0302	On aircraft repair	0.9680	0.50	1	0.50	.2420	-
		Unsched. removal & replace.	116.4029	0.92	1.4	0.66		
		Scheduled removal	0.9680	8.75	1.4	6.25		
Shafting	0303	On aircraft repair	3.3880	0.12	1	0.32	.4840	-
		Unsched. removal & replace.	6.5341	4.85	1.9	2.55		
		Scheduled removal	0.2420	0.48	1.9	0.25		
Miscellaneous transmissions	0304	On aircraft repair	2.9040	0.53	1	0.53	3.3880	-
		Unsched. removal & replace.	8.4701	1.65	1.7	0.97		
		Scheduled removal	-	-	-	-		
Maintenance actions	0305	On aircraft repair	55.4185	0.57	2	0.29	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		
Shaft assembly forward 114D3052-7	0306	On aircraft repair	0.2420	0.33	1	0.33	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		
Shaft assembly sync 02	0307	On aircraft repair	0.2420	0.50	1	0.50	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		
Shaft assembly sync 03	0308	On aircraft repair	0.2420	0.33	1	0.33	-	-
		Unsched. removal & replace.	0.2420	1.33	1.9	0.70		
		Scheduled removal	-	-	-	-		
Shaft assembly sync 03 maintenance action	0309	On aircraft repair	0.7260	0.78	2	0.39	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		
Shaft assembly sync 04	0310	On aircraft repair	0.4840	0.91	1.3	0.48	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		
Shaft assembly aft 114D3070-6 Rotor 08	0311	On aircraft repair	0.9680	3.91	1.9	2.06	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		
Shaft assembly aft 08 maintenance action	0312	On aircraft repair	0.4840	2.97	2	1.49	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		
Shaft assembly aft 09 114D3070-6 maintenance action	0313	On aircraft repair	0.7260	2.97	2	1.49	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		

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TABLE XLVIII. Continued

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
Shaft transmission 114D3241 08 Maintenance action	0314	On aircraft repair Unsched. removal & replace. Scheduled removal	0.2420	2.25	2	1.13	-	-
Shaft transmission 114D3241 09	0315	On aircraft repair Unsched. removal & replace. Scheduled removal	0.2420	1.25	1.9	0.66	-	-
Shaft transmission 09 Maintenance action	0316	On aircraft repair Unsched. removal & replace. Scheduled removal	0.2420	3.40	2	1.70	-	-
Shaft, RH engine dis 114D3247-1 Maintenance action	0317	On aircraft repair Unsched. removal & replace. Scheduled removal	0.9680	3.46	2	1.73	-	-
Shaft assembly, aft rotor 114D3250-1	0318	On aircraft repair Unsched. removal & replace. Scheduled removal	0.2420	19.76	1.9	10.40	-	-
Shaft assembly, aft rotor, 114D3250-1 Maintenance action	0319	On aircraft repair Unsched. removal & replace. Scheduled removal	0.7260	0.44	2	0.22	-	-
Shaft assembly, aft 114D3053-4 rotor	0320	On aircraft repair Unsched. removal & replace. Scheduled removal	0.4840	2.15	1.9	1.13	-	-
Shaft assembly, aft 114D3053-4 Maintenance action	0321	On aircraft repair Unsched. removal & replace. Scheduled removal	1.2100	0.27	2	0.14	-	-
Adapter splined 114D3242-1	0322	On aircraft repair Unsched. removal & replace. Scheduled removal	0.2420	5.00	1.9	2.63	-	-
Adapter splined 114D3242-1 Maintenance action	0323	On aircraft repair Unsched. removal & replace. Scheduled removal	0.2420	0.08	2	0.04	-	-
Adapter shaft L/H engine 114D3245-1	0324	On aircraft repair Unsched. removal & replace. Scheduled removal	0.2420	0.50	1	0.50	-	-
Adapter shaft L/H engine Maintenance action	0325	On aircraft repair Unsched. removal & replace. Scheduled removal	0.2420	0.25	2	0.13	-	-
Transmission assembly forward 114D1200-3	0326	On aircraft repair Unsched. removal & replace. Scheduled removal	0.9680	24.85	1.7	14.62	-	-

TABLE XLVIII. Continued

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
Transmission assembly forward 114D1200-3 Maintenance action	0327	On aircraft repair Unsched. removal & replace. Scheduled removal	3.3880 - -	4.58 - -	2 - -	2.29 - -	-	-
Transmission, aft 114D2200-5	0328	On aircraft repair Unsched. removal & replace. Scheduled removal	0.4840 - -	48.03 - -	1.7 - -	28.25 - -	-	-
Transmission, aft 114D2200-5 Maintenance action	0329	On aircraft repair Unsched. removal & replace. Scheduled removal	6.7761 - -	1.10 - -	2 - -	0.55 - -	-	-
Transmission, comb 114D5200-1	0330	On aircraft repair Unsched. removal & replace. Scheduled removal	0.9680 - -	15.88 - -	1.7 - -	9.34 - -	-	-
Transmission, comb. 114D5200-1 Maintenance action	0331	On aircraft repair Unsched. removal & replace. Scheduled removal	3.1460 - -	0.71 - -	2 - -	0.36 - -	-	-
Transmission assembly 114D6200-1 LH	0332	On aircraft repair Unsched. removal & replace. Scheduled removal	1.4520 - -	9.00 - -	1.7 - -	5.29 - -	-	-
Transmission assembly 114D6200-1, LH Maintenance action	0333	On aircraft repair Unsched. removal & replace. Scheduled removal	0.7260 - -	0.27 - -	2 - -	0.14 - -	-	-
Transmission assembly 114D6200-1, RH	0334	On aircraft repair Unsched. removal & replace. Scheduled removal	2.9040 - -	6.44 - -	1.7 - -	3.79 - -	-	-
Transmission assembly 114D6200-1, RH Maintenance action	0335	On aircraft repair Unsched. removal & replace. Scheduled removal	0.9680 - -	0.41 - -	2 - -	0.21 - -	-	-
Transmission assembly 114D6200-2, LH Maintenance action	0336	On aircraft repair Unsched. removal & replace. Scheduled removal	0.0001 - -	3.33 - -	1.7 - -	1.96 - -	-	-
Transmission assembly 114D6200-2, LH Maintenance action	0337	On aircraft repair Unsched. removal & replace. Scheduled removal	2.4200 0.2420 -	0.65 2.50 -	2 2 -	0.33 1.25 -	-	-
Transmission assembly 114D6200-2, RH Maintenance action	0338	On aircraft repair Unsched. removal & replace. Scheduled removal	0.0001 - -	3.43 - -	1.7 - -	2.02 - -	-	-
Transmission assembly 114D6200-2, RH Maintenance action	0339	On aircraft repair Unsched. removal & replace. Scheduled removal	4.3560 0.4840 -	0.70 2.25 -	2 2 -	0.35 1.13 -	-	-

TABLE XLVIII. Continued

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
Shaft, quill engine 114D6263-1	0340	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	0.4840	0.65	1.7	0.38		
		Scheduled removal	-	-	-	-		
Shaft assembly, forward, 114RJ052-7 Maintenance action	0341	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	0.2420	0.30	2	0.15		
		Scheduled removal	-	-	-	-		
Shaft assembly, sync 114D3048-7 Maintenance action	0342	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	0.0001	1.09	1.7	0.64		
		Scheduled removal	-	-	-	-		
Shaft assembly, aft 114D3070-6, A8 Maintenance action	0343	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	0.0001	1.36	1.7	0.80		
		Scheduled removal	-	-	-	-		
Shaft transmission 114D3241 Maintenance action	0344	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	0.0001	1.28	1.7	0.75		
		Scheduled removal	-	-	-	-		
Shaft assembly, aft rotor, 114D3250-1 Maintenance action	0345	On aircraft repair	0.7260	14.43	2	7.22	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	0.0001	14.98	1.7	8.01		
Adapter assembly, forward drive 114D3067-3 Maintenance action	0346	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	0.0001	2.84	1.7	1.67		
		Scheduled removal	-	-	-	-		
Adapter, shaft transmission 114D3243-1	0347	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	0.0001	1.70	1.7	1.00		
		Scheduled removal	-	-	-	-		
Transmission, forward 114D1200-3 Maintenance action	0348	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	0.0001	19.69	1.7	11.50		
		Scheduled removal	-	-	-	-		
Transmission, aft 114D2200-5 Maintenance action	0349	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	0.0001	17.92	1.7	10.54		
		Scheduled removal	-	-	-	-		
Transmission, comb 114D5200-1 Maintenance action	0350	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	0.0001	20.32	1.7	11.95		
		Scheduled removal	-	-	-	-		
Transmission engine 114D6200-2 Maintenance action	0351	On aircraft repair	0.7260	3.53	2	1.77	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	0.0001	2.55	1.7	1.5		

TABLE XLIX. CH-47C INPUT DATA - ELECTRICAL SYSTEM

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
AC power supply and distribution	0401	On aircraft repair	2.6621	1.04	1	1.04	-	-
		Unsched. removal & replace.	4.5980	0.80	1.4	0.57		
		Scheduled removal	-	-	-	-		
Cabin and ramp lighting	0402	On aircraft repair	0.4840	0.29	1	0.29	-	-
		Unsched. removal & replace.	0.9680	0.38	1.3	0.29		
		Scheduled removal	-	-	-	-		
Cockpit lighting	0403	On aircraft repair	1.2100	0.28	1	0.28	-	-
		Unsched. removal & replace.	0.9680	0.35	1.2	0.29		
		Scheduled removal	-	-	-	-		
Console lighting	0404	On aircraft repair	0.7260	0.08	1.5	0.05	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		
DC power supply and distribution	0405	On aircraft repair	0.7260	0.70	1	0.70	.9680	1.4520
		Unsched. removal & replace.	1.6940	0.32	1.5	0.21		
		Scheduled removal	0.2420	0.60	1.5	0.40		
Formation lights	0406	On aircraft repair	7.2601	0.40	1	0.40	-	-
		Unsched. removal & replace.	1.9360	0.44	2.9	0.15		
		Scheduled removal	-	-	-	-		
Inspection lighting	0407	On aircraft repair	2.1781	0.64	1	0.64	-	-
		Unsched. removal & replace.	6.5340	0.21	1.3	0.16		
		Scheduled removal	-	-	-	-		
Navigation lights and anti-collision	0408	On aircraft repair	0.7260	1.75	1	1.75	-	-
		Unsched. removal & replace.	9.4381	0.69	1.4	0.49		
		Scheduled removal	-	-	-	-		
Overhead panel lighting	0409	On aircraft repair	0.2420	1.00	1	1.00	-	-
		Unsched. removal & replace.	1.4520	0.17	1.4	0.12		
		Scheduled removal	-	-	-	-		
Searchlight and landing lights	0410	On aircraft repair	0.2420	2.00	1	2.00	-	-
		Unsched. removal & replace.	3.1460	1.96	1.3	1.51		
		Scheduled removal	-	-	-	-		
Troop and passenger warning	0411	On aircraft repair	0.2420	1.00	1	1.00	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		
Wires, miscellaneous	0412	On aircraft repair	21.2962	0.58	2	0.29	-	.2420
		Unsched. removal & replace.	6.0500	1.27	2.7	0.47		
		Scheduled removal	-	-	-	-		
Maintenance actions	0413	On aircraft repair	26.1362	0.56	2	0.28	-	-
		Unsched. removal & replace.	0.4840	0.50	2	0.25		
		Scheduled removal	-	-	-	-		

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TABLE L.   CH-47C INPUT DATA - EQUIPMENT SYSTEM

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
APU	0501	On aircraft repair	1.2100	0.58	2	0.29		-
		Unsched. removal & replace.	2.6620	1.14	1.7	0.67	.4840	
		Scheduled removal	0.4840	0.39	1.7	0.23		
Cargo rescue hoist	0502	On aircraft repair	2.6620	0.66	1	0.66		-
		Unsched. removal & replace.	1.6940	1.45	2	0.72	-	
		Scheduled removal	-	-	-	-		
Cockpit and cabin seat	0503	On aircraft repair	4.8401	1.02	1	1.02		-
		Unsched. removal & replace.	2.9040	0.30	1.1	0.27	-	
		Scheduled removal	-	-	-	-		
Emergency apparatus	0504	On aircraft repair	6.2921	0.24	1	0.24		-
		Unsched. removal & replace.	5.0820	0.26	1	0.26	-	
		Scheduled removal	-	-	-	-		
External cargo hook and towing	0505	On aircraft repair	2.4200	1.08	1	1.08		-
		Unsched. removal & replace.	9.9221	1.05	1.4	0.75	-	
		Scheduled removal	-	-	-	-		
Furnishings	0506	On aircraft repair	2.4200	0.98	1	0.98		-
		Unsched. removal & replace.	1.9360	0.40	1.2	0.33	-	
		Scheduled removal	-	-	-	-		
Heating and ventilation	0507	On aircraft repair	3.6300	0.86	4	0.86		-
		Unsched. removal & replace.	2.9040	1.14	1.7	0.67	-	
		Scheduled removal	-	-	-	-		
Windshield wipers and anti-icing	0508	On aircraft repair	0.2420	0.33	1	0.33		-
		Unsched. removal & replace.	2.4200	0.81	1.3	0.62	-	
		Scheduled removal	-	-	-	-		
Maintenance actions	0509	On aircraft repair	48.6423	0.65	1	0.65		-
		Unsched. removal & replace.	1.6940	0.72	2	0.36	-	
		Scheduled removal	-	-	-	-		

TABLE L1.   CH-47C INPUT DATA - LANDING GEAR SYSTEM

Subsystem Name	WUC	Task Type	Fail Rate 100C hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
Fitting and braces	0601	On aircraft repair	2.6620	0.36	1	0.36	-	-
		Unsched. removal & replace.	0.7260	0.11	1	0.21		
		Scheduled removal	-	-	-	-		
Power steering	0602	On aircraft repair	0.2420	0.33	2	0.16	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		
Shock struts	0603	On aircraft repair	0.4840	0.33	2	0.17	-	-
		Unsched. removal & replace.	0.3420	2.30	1.9	1.21		
		Scheduled removal	-	-	-	-		
Swivel lock system	0604	On aircraft repair	1.9360	1.56	1	1.56	-	-
		Unsched. removal & replace.	3.3880	2.84	1.2	2.37		
		Scheduled removal	-	-	-	-		
Wheel assemblies	0605	On aircraft repair	0.4840	0.14	1	0.14	-	-
		Unsched. removal & replace.	4.3560	2.84	1.5	1.89		
		Scheduled removal	-	-	-	-		
Wheels and parking brake system	0606	On aircraft repair	1.2100	1.13	1	1.13	-	-
		Unsched. removal & replace.	4.1140	4.10	1.5	0.73		
		Scheduled removal	-	-	-	-		
Maintenance actions	0607	On aircraft repair	24.2002	0.31	1	0.31	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		

TABLE LII. CH-47C INPUT DATA - FLIGHT CONTROL SYSTEM

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
Dungees and dampers	0701	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	0.2420	1.04	1.3	0.80		
		Scheduled removal	-	-	-	-		
Cockpit controls	0702	On aircraft repair	0.4840	1.00	1	1.00	-	-
		Unsched. removal & replace.	2.1780	2.35	1.4	1.68		
		Scheduled removal	-	-	-	-		
First stage mixing	0703	On aircraft repair	0.2420	0.75	1	0.75	.2420	-
		Unsched. removal & replace.	2.4200	3.39	1.5	2.26		
		Scheduled removal	-	-	-	-		
Hydraulic boost	0704	On aircraft repair	4.5981	0.75	2	0.37	-	-
		Unsched. removal & replace.	15.9721	1.49	2	0.74		
		Scheduled removal	-	-	-	-		
Magnetic brake and centering spring	0705	On aircraft repair	0.4840	0.59	2	0.29	.2420	-
		Unsched. removal & replace.	5.0820	0.88	1.6	0.55		
		Scheduled removal	-	-	-	-		
Pedals and positioning system	0706	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		
Miscellaneous SAS equipment	0707	On aircraft repair	1.4520	7.92	1	7.92	.242	-
		Unsched. removal & replace.	3.8720	2.58	1.7	1.52		
		Scheduled removal	-	-	-	-		
Second stage mixing	0708	On aircraft repair	1.4520	6.02	1	6.02	-	-
		Unsched. removal & replace.	4.5980	2.24	1.7	1.32		
		Scheduled removal	-	-	-	-		
Transfer cables	0709	On aircraft repair	0.4420	2.25	1	2.25	-	-
		Unsched. removal & replace.	3.6300	1.58	1.4	1.13		
		Scheduled removal	0.2420	17.50	1.4	12.50		
Trim and stick position	0710	On aircraft repair	0.9680	1.00	1	1.00	.4840	-
		Unsched. removal & replace.	6.2920	3.50	1.5	2.33		
		Scheduled removal	-	-	-	-		
Maintenance actions	0711	On aircraft repair	236.1938	0.37	2	0.19	-	-
		Unsched. removal & replace.	0.9680	2.58	2	1.29		
		Scheduled removal	-	-	-	-		
SAS #1	0712	On aircraft repair	0.2420	0.08	1	0.08	-	-
		Unsched. removal & replace.	0.7260	1.04	1.7	0.61		
		Scheduled removal	-	-	-	-		
SAS #1 Maintenance action	0713	On aircraft repair	5.5660	1.16	2	0.58	-	-
		Unsched. removal & replace.	0.2420	0.50	2	0.25		
		Scheduled removal	-	-	-	-		

TABLE LII. Continued

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
SAS #2	0714	On aircraft repair	0.2420	6.75	1	6.75	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		
SAS #2 Maintenance action	0715	On aircraft repair	4.5980	0.92	2	0.46	-	-
		Unsched. removal & replace.	0.2420	2.00	2	1.00		
		Scheduled removal	-	-	-	-		

TABLE LIII. CH-47C INPUT DATA - HYDRAULIC SYSTEM

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
Utility	0801	On aircraft repair	3.8721	0.87	1	0.87		-
		Unsched. removal & replace.	29.7662	1.04	1.6	0.65	.7260	
		Scheduled removal	-	-	-	-		
Maintenance Actions	0802	On aircraft repair	45.7383	0.51	2	0.25		-
		Unsched. removal & replace.	0.2420	1.00	2	0.50	-	
		Scheduled removal	-	-	-	-		

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TABLE LIV. CH-47C INPUT DATA - ROTOR SYSTEM

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
Blades	0901	On aircraft repair	1.6941	0.80	2	0.40	2.6620	-
		Unsched. removal & replace.	1.6941	0.46	1.6	0.29		
		Scheduled removal	0.7261	0.83	1.6	0.52		
Controls	0902	On aircraft repair	1.4520	0.97	1	0.97	.9680	.2420
		Unsched. removal & replace.	10.8901	2.35	1.6	1.47		
		Scheduled removal	0.2420	3.20	1.6	2.00		
Damper	0903	On aircraft repair	2.1780	0.65	1	0.65	.4840	-
		Unsched. removal & replace.	20.5702	3.36	1.6	2.10		
		Scheduled removal	-	-	-	-		
Hub assembly	0904	On aircraft repair	2.4200	1.54	1	1.54	.4840	.2420
		Unsched. removal & replace.	10.4061	1.14	1.7	0.67		
		Scheduled removal	1.2100	4.05	1.7	2.38		
Rainshield and boots	0905	On aircraft repair	2.1780	0.58	1	0.29	-	-
		Unsched. removal & replace.	7.7441	1.87	1.8	1.04		
		Scheduled removal	-	-	-	-		
Maintenance actions	0906	On aircraft repair	116.6448	1.09	2	0.55	-	-
		Unsched. removal & replace.	1.2101	2.06	2	1.03		
		Scheduled removal	-	-	-	-		
Blade, forward 114R1502-25	0907	On aircraft repair	1.6940	0.73	2	0.37	-	-
		Unsched. removal & replace.	8.2280	2.22	1.6	1.39		
		Scheduled removal	3.3880	2.02	1.6	1.26		
Blade, forward Maintenance actions	0908	On aircraft repair	0.4840	2.67	2	1.34	-	-
		Unsched. removal & replace.	0.4840	0.94	1.6	0.59		
		Scheduled removal	-	-	-	-		
Blade, aft 114R1502-26	0909	On aircraft repair	3.3880	0.50	2	0.25	-	-
		Unsched. removal & replace.	3.6300	1.97	1.6	1.23		
		Scheduled removal	4.3560	2.13	1.6	1.33		
Blade, forward 114R1502-25 Maintenance action	0910	On aircraft repair	42.5923	1.09	2	0.55	-	-
		Unsched. removal & replace.	4.1140	1.63	2	0.82		
		Scheduled removal	-	-	-	-		
Blade, forward 114R1502-33 Maintenance action	0911	On aircraft repair	2.4200	0.68	2	0.34	-	-
		Unsched. removal & replace.	0.4840	1.75	2	0.88		
		Scheduled removal	-	-	-	-		
Blade, aft 114R1502-26 Maintenance action	0912	On aircraft repair	27.3463	1.16	2	0.58	-	-
		Unsched. removal & replace.	2.1780	1.09	2	0.55		
		Scheduled removal	-	-	-	-		
Blade, aft 114R1502-34 Maintenance action	0913	On aircraft repair	0.4840	1.34	2	0.67	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		

TABLE LIV. Continued

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
Controllable swashplate (aft) 114R3505-12	0914	On aircraft repair Unsched. removal & replace. Scheduled removal	- 0.4840 -	- 4.60 -	- 1 -	- 4.60 -	- - -	- - -
Controllable swashplate (forward)	0915	On aircraft repair Unsched. removal & replace. Scheduled removal	- 0.9680 -	- 8.34 -	- 1 -	- 8.34 -	- - -	- - -
Controllable swashplate (aft), maintenance action 114R3505-12	0916	On aircraft repair Unsched. removal & replace. Scheduled removal	- 0.1210 -	- 0.08 -	- 1 -	- 0.08 -	- - -	- - -
Swashplate (aft) 114R3505-12 Maintenance action	0917	On aircraft repair Unsched. removal & replace. Scheduled removal	- 0.1210 -	- 0.08 -	- 1 -	- 0.08 -	- - -	- - -
Rotary wing (assembly) forward	0918	On aircraft repair Unsched. removal & replace. Scheduled removal	- 0.9680 0.9680	- 13.51 10.25	- 2 2	- 6.75 5.13	- - -	- - -
Rotary wing assembly, maintenance action	0919	On aircraft repair Unsched. removal & replace. Scheduled removal	- 0.1210 -	- 0.50 -	- 1 -	- 0.50 -	- - -	- - -
Rotary wing assembly, maintenance action	0920	On aircraft repair Unsched. removal & replace. Scheduled removal	- 0.2420 -	- 0.50 -	- 1 -	- 0.50 -	- - -	- - -
Rotary wing assembly, aft	0921	On aircraft repair Unsched. removal & replace. Scheduled removal	- 0.2420 0.2420	- 3.83 9.00	- 2 2	- 1.92 4.50	- - -	- - -
Rotary wing assembly, aft Maintenance action	0922	On aircraft repair Unsched. removal & replace. Scheduled removal	- 0.2420 -	- 2.00 -	- 1 -	- 2.00 -	- - -	- - -
Rotary wing assembly, aft maintenance action	0923	On aircraft repair Unsched. removal & replace. Scheduled removal	- 0.2420 -	- 2.00 -	- 1 -	- 2.00 -	- - -	- - -

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TABLE LV. CH-47C INPUT DATA - INDICATING SYSTEM

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
APU indicator	1001	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	-	-	-	-	-	-
		Scheduled removal	-	-	-	-		
Chip detector	1002	On aircraft repair	3.8721	0.45	1	0.45	-	-
		Unsched. removal & replace.	3.3880	1.55	1	1.55	-	-
		Scheduled removal	-	-	-	-		
Basic flight instruments	1003	On aircraft repair	1.4520	0.27	1	0.27	-	.2420
		Unsched. removal & replace.	4.1140	0.74	1	0.74	-	
		Scheduled removal	-	-	-	-		
Drive system lubrication	1004	On aircraft repair	0.9681	0.97	1	0.97	-	-
		Unsched. removal & replace.	5.8080	0.88	1.4	0.63		
		Scheduled removal	-	-	-	-		
Engine fire detection	1005	On aircraft repair	1.4522	1.09	1	1.09	.2420	-
		Unsched. removal & replace.	17.9081	1.59	1.3	1.22		
		Scheduled removal	-	-	-	-		
Hydraulic pressure	1006	On aircraft repair	0.2420	0.20	2	0.10	-	-
		Unsched. removal & replace.	0.2420	0.93	1.6	0.58		
		Scheduled removal	-	-	-	-		
Master caution indicating	1007	On aircraft repair	0.2420	1.00	1	1.00	-	-
		Unsched. removal & replace.	0.9680	0.80	1.6	0.50		
		Scheduled removal	-	-	-	-		
Powerplant fuel	1008	On aircraft repair	1.2100	1.67	3	0.56	-	-
		Unsched. removal & replace.	2.6620	0.91	3	0.30		
		Scheduled removal	-	-	-	-		
Powerplant lubrication	1009	On aircraft repair	0.9681	1.02	1	1.02	-	-
		Unsched. removal & replace.	6.5340	1.20	1.3	0.92		
		Scheduled removal	-	-	-	-		
Powerplant performance	1010	On aircraft repair	1.4520	1.77	1	1.77	.7260	.2420
		Unsched. removal & replace.	8.9541	1.08	1.4	0.77		
		Scheduled removal	0.7260	1.62	1.4	1.16		
Rotor tachometer	1011	On aircraft repair	1.6940	0.83	1	0.83	-	-
		Unsched. removal & replace.	10.6481	0.74	1.5	0.49		
		Scheduled removal	-	-	-	-		
Maintenance actions	1012	On aircraft repair	57.8384	0.49	2	0.25	-	-
		Unsched. removal & replace.	0.7260	0.33	2	0.16		
		Scheduled removal	-	-	-	-		

TABLE LVI. CH-47C INPUT DATA - POWERPLANT SYSTEM

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
Anti-icing and de-icing	1101	On aircraft repair	7.7440	0.61	1	0.61	-	-
		Unsched. removal & replace.	9.4381	1.70	1.3	1.31		
		Scheduled removal	-	-	-	-		
Installation basic engine	1102	On aircraft repair	2.1780	1.49	1	1.19	9.9221	.4840
		Unsched. removal & replace.	10.8901	1.74	1.5	1.16		
		Scheduled removal	0.4840	0.38	1.5	0.25		
Controls	1103	On aircraft repair	7.3880	0.81	1	0.81	1.2160	.4840
		Unsched. removal & replace.	30.6063	1.17	1.5	0.78		
		Scheduled removal	5.5660	1.26	1.5	0.64		
Cowling and nacelles	1104	On aircraft repair	84.9427	1.02	1	1.02	-	-
		Unsched. removal & replace.	54.2084	1.03	1.8	0.57		
		Scheduled removal	-	-	-	-		
Exhaust	1105	On aircraft repair	8.2281	0.74	1	0.74	-	-
		Unsched. removal & replace.	5.5660	1.32	1.4	0.94		
		Scheduled removal	-	-	-	-		
Fire extinguishing	1106	On aircraft repair	-	-	-	-	-	-
		Unsched. removal & replace.	1.4520	0.46	1.3	0.35		
		Scheduled removal	-	-	-	-		
Fuel	1107	On aircraft repair	10.8901	0.87	1	0.87	2.9040	-
		Unsched. removal & replace.	31.2182	2.56	1.3	1.97		
		Scheduled removal	-	-	-	-		
Ignition	1108	On aircraft repair	0.7260	0.39	1	0.39	.2420	-
		Unsched. removal & replace.	3.8720	0.61	1.9	0.32		
		Scheduled removal	-	-	-	-		
Lubrication	1109	On aircraft repair	2.1780	0.62	1	0.62	2.9040	-
		Unsched. removal & replace.	9.9221	1.79	1.3	1.38		
		Scheduled removal	-	-	-	-		
Mounts and support	1110	On aircraft repair	6.5341	1.29	1	1.29	1.4520	-
		Unsched. removal & replace.	28.0722	1.39	1.4	0.99		
		Scheduled removal	-	-	-	-		
Starting	1111	On aircraft repair	0.4840	0.67	1	0.67	.4840	-
		Unsched. removal & replace.	2.9040	0.98	1.4	0.70		
		Scheduled removal	-	-	-	-		
Maintenance action	1112	On aircraft repair	293.3062	1.22	2	0.61	-	-
		Unsched. removal & replace.	20.5702	1.63	2	0.82		
		Scheduled removal	-	-	-	-		
LH engine	1113	On aircraft repair	1.2100	3.90	1	3.90	-	-
		Unsched. removal & replace.	4.8400	13.68	1.5	9.12		
		Scheduled removal	-	-	-	-		

TABLE LVI. Continued

Subsystem Name	WUC	Task Type	Fail Rate 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate	NORS Rate
LH engine maintenance action	1114	On aircraft repair	10.1641	0.98	2	0.49	-	-
		Unsched. removal & replace.	0.9680	3.98	2	1.99		
		Scheduled removal	-	-	-	-		
PH engine	1115	On aircraft repair	0.2420	3.75	1	3.75	-	-
		Unsched. removal & replace.	6.2920	13.34	1.5	8.89		
		Scheduled removal	-	-	-	-		
PH engine maintenance action	1116	On aircraft repair	12.0681	0.97	2	0.49	-	-
		Unsched. removal & replace.	0.2420	14.92	2	7.46		
		Scheduled removal	-	-	-	-		
PH engine maintenance actions	1117	On aircraft repair	1.0000	0.97	2	0.49	-	-
		Unsched. removal & replace.	-	-	-	-		
		Scheduled removal	-	-	-	-		

APPENDIX V
HLH R&M INPUT DATA BASE

Tables LVII through LV have been employed in the development of the HLH R&M simulation model functions tables.

Included in this appendix are the various inspection and servicing tasks against the rotor, flight controls, drive, and cargo handling systems. These items are not malfunctions. As such the total malfunction rate used for the HLH simulation is approximately 1.05 occurrences per flight hour.

TABLE LVII. HLH INPUT DATA - NON-ATC SYSTEM

Subsystem Name		WUC	Task Type	Failure Rate/ 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate/ 1000 hrs
Fuselage	90%	0101	On aircraft repair. Unsched. removal & replace. Scheduled removal	314.0	1.0	2	0.5	0.475
	10%	0102	On aircraft repair. Unsched. removal & replace. Scheduled removal	35.0	39.0	5	7.8	-
Nacelles	90%	0201	On aircraft repair. Unsched. removal & replace. Scheduled removal	23.4	1.0	2	0.5	0.530
	10%	0202	On aircraft repair. Unsched. removal & replace. Scheduled removal	2.6	20.0	5	4.0	-
Landing gear	90%	0301	On aircraft repair. Unsched. removal & replace. Scheduled removal	61.2	1.0	2	0.5	0.172
	10%	0302	On aircraft repair. Unsched. removal & replace. Scheduled removal	6.8	26.0	5	5.2	-
Powerplant	90	0401	On aircraft repair. Unsched. removal & replace. Scheduled removal	40.5	1.0	2	0.5	1.920
	10%	0402	On aircraft repair. Unsched. removal & replace. Scheduled removal	4.5	58.0	5	11.6	-
Powerplant controls	90%	0501	On aircraft repair. Unsched. removal & replace. Scheduled removal	53.1	1.0	2	0.5	0.530
	10%	0502	On aircraft repair. Unsched. removal & replace. Scheduled removal	5.9	18.0	4	4.5	-
Fuel	90%	0601	On aircraft repair. Unsched. removal & replace. Scheduled removal	19.8	1.0	2	0.5	0.091
	10%	0602	On aircraft repair. Unsched. removal & replace. Scheduled removal	2.2	48.0	6	8.0	-

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TABLE LVII. Continued

Subsystem Name		WUC	Task Type	Failure Rate/ 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate/ 1000 hrs
APU	90%	0701	On aircraft repair Unsched. removal & replace. Scheduled removal	4.5	1.0	2	0.5	0.636
	10%	0702	On aircraft repair Unsched. removal & replace. Scheduled removal	0.5	45.0	5	9.0	-
Communications	90%	0801	On aircraft repair Unsched. removal & replace. Scheduled removal	14.4	1.0	2	0.5	0.002
	10%	0802	On aircraft repair Unsched. removal & replace. Scheduled removal	1.6	10.8	3	3.6	-
Navigational/ guidance	90%	0901	On aircraft repair Unsched. removal & replace. Scheduled removal	36.9	0.4	1	0.4	0.000
	10%	0902	On aircraft repair Unsched. removal & replace. Scheduled removal	4.1	0.4	1	0.4	-
Instruments	90%	1001	On aircraft repair Unsched. removal & replace. Scheduled removal	65.7	1.0	2	0.5	0.384
	10%	1002	On aircraft repair Unsched. removal & replace. Scheduled removal	7.3	15.0	3	5.0	-
Auxiliary Elect	90%	1101	On aircraft repair Unsched. removal & replace. Scheduled removal	5.4	0.3	1	0.3	0.000
	10%	1102	On aircraft repair Unsched. removal & replace. Scheduled removal	0.6	0.3	1	0.3	--
AIDAPS	90%	1201	On aircraft repair Unsched. removal & replace. Scheduled removal	1.8	1.0	2	0.5	0.000
	10%	1202	On aircraft repair Unsched. removal & replace. scheduled removal	0.2	26.0	5	5.2	-

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TABLE LVII. Continued

Subsystem Name		WUC	Task Type	Failure Rate/ 1000 hr	MMH/ Task	Crew Size	EXT	Mission Affecting Rate/ 1000 hrs
Pneumatic power	90%	1301	On aircraft repair Unsched. removal & replace. Scheduled removal	22.5	1.0	2	0.5	0.001
	10%	1302	On aircraft repair Unsched. removal & replace. Scheduled removal	2.5	20.0	5	4.0	-
Hydraulic power (utility)	90%	1401	On aircraft repair Unsched. removal & replace. Scheduled removal	31.5	1.0	2	0.5	0.573
	10%	1402	On aircraft repair Unsched. removal & replace. Scheduled removal	3.5	16.4	4	4.1	-
Electrical power	90%	1501	On aircraft repair Unsched. removal & replace. Scheduled removal	32.4	1.0	2	0.5	0.144
	10%	1502	On aircraft repair Unsched. removal & replace. Scheduled removal	3.6	16.0	4	4.0	-
Accommodations/ furnishings	90%	1601	On aircraft repair Unsched. removal & replace. Scheduled removal	17.1	1.0	2	0.5	0.000
	10%	1602	On aircraft repair Unsched. removal & replace. Scheduled removal	1.9	33.0	5	6.6	-
Environmental/ control	90%	1701	On aircraft repair Unsched. removal & replace. Scheduled removal	12.6	1.0	2	0.5	0.020
	10%	1702	On aircraft repair Unsched. removal & replace. Scheduled removal	1.4	51.0	6	8.5	-
Flight controls	90%	1801	On aircraft repair Unsched. removal & replace. Scheduled removal	67.4	1.0	2	0.5	0.190
	10%	1802	On aircraft repair Unsched. removal & replace. Scheduled removal	7.5	37.0	5	7.4	-

TABLE LVIII. RLA INPUT DATA - ROTOR SYSTEM

Subsystem Name	WUC	Task Type	Failure Rate/ 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate/ 1000 hrs
Hub and upper controls (fault isolation)	1901	On aircraft repair	5.333	0.5000	1	0.5	
Forward rotor blades (inspection)	1902	On aircraft repair	100.0	0.0904	2	0.5148	-
Forward rotor blades (inspection)	1903	On aircraft repair	3.3	2.6754	2	2.2737	-
Rotor blade (troubleshoot failure detection system)	1904	Unsched. removal & replace.	0.2742	1.4040	1	1.4040	-
Forward rotor blades (removal and replacement)	1905	Unsched. removal & replace.	1.3946	5.7720	5	2.1645	0.3265
Forward rotor blades (track)	1906	On aircraft repair	3.1982	1.5015	3	1.4235	-
Forward and aft rotor blades (check track)	1907	On aircraft repair	31.4754	0.2730	2	0.3705	-
Forward rotor blades (removal and replacement tiedown fitting)	1908	Unsched. removal & replace.	0.0053	0.8970	3	0.7995	-
Aft rotor blades (inspection)	1909	On aircraft repair	100.0	3.3384	3	1.2948	-
Aft rotor blades (inspection)	1910	On aircraft repair	3.3	5.2260	2	2.6910	-
Aft rotor blades (track)	1911	On aircraft repair	3.1982	1.7745	3	1.6965	-
Aft rotor blades (removal and replacement tiedown fittings)	1912	Unsched. removal & replace.	0.0053	1.7940	3	1.4235	-

TABLE LVIII. Continued

Subsystem Name	WUC	Task Type	Failure Rate/ 10000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate/ 1000 hrs
Aft rotor blade (removal & replacement)	1913	Unsched. removal & replace.	1.3946	6.4545	5	2.4570	0.3265
Hub assembly (inspection)	1914	On aircraft repair	3.333	0.8970	1	0.8970	-
Hub assembly (removal & replacement)	1915	Unsched. removal & replace.	0.4477	20.0655	5	11.0292	0.3713
Hub assembly (rem & repl pitch housing/ cross beam assembly)	1916	Unsched. removal & replace.	10.731	6.5130	4	2.6715	-
Hub assembly (replace bearing elastomeric)	1917	Unsched. removal & replace.	5.319	1.7355	3	0.9165	-
Hub assembly (rem & repl centrifugal stop assembly)	1918	Unsched. removal & replace.	0.0387	0.9360	3	0.5655	-
Hub assembly (replacement shear bearing)	1919	Unsched. removal & replace.	2.236	1.4040	3	0.8190	-
Hub assembly (rem & repl pitch housing assembly)	1920	Unsched. removal & replace.	0.4183	0.9360	3	0.5655	-
Hub assembly (replace cross beam)	1921	Unsched. removal & replace.	0.0362	1.8720	3	1.0530	-
Hub assembly (service damper assembly)	1922	On aircraft repair	3.2	0.8970	2	0.4875	-
Hub assembly (inspection of damper assembly	1923	On aircraft repair	3.333	0.0780	1	0.0780	-
Hub assembly (rem & repl. damper assembly)	1924	Unsched. removal & replace.	7.0	2.1645	3	1.0725	0.1168
Hub assembly (repair, repl. bearing)	1925	On aircraft repair	0.9018	0.9945	3	0.6240	-

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TABLE LVIII. Continued

Subsystem Name	WUC	Task Type	Failure Rate/ 1000 hr	MMR/ Task	Crew Size	EMT	Mission Affecting Rate/
Hub assembly (repl. outboard bearing)	1926	Unsched. removal & replace.	.9018	2.0670	6	1.1310	-
Hub & upper controls (inspection)	1927	On aircraft repair	100.0	0.8424	1	0.8424	-
Upper controls (inspection)	1928	On aircraft repair	3.333	0.6942	2	0.6942	-
Upper controls (removal & repl. pitch link)	1929	Unsched. removal & replace.	3.6072	1.2480	3	0.7995	-
Upper controls pitch link (replace bearings)	1930	Unsched. removal & replace.	7.2144	0.2457	2	0.2457	-
Upper controls (grease swash-plate bearings)	1931	Unsched. removal & replace.	3.333	1.9110	2	1.1505	-
Upper controls (removal & repl. swashplate assembly)	1932	Unsched. removal & replace.	1.6328	24.5115	5	12.0042	-
Upper controls (repl. bearing condition sensor)	1933	Unsched. removal & replace.		0.4290	1	0.4290	-
Upper controls (removal & replace. scissors arm)	1934	Unsched. removal & replace.	0.0750	6.5325	3	3.9195	-

TABLE LIX. HLH INPUT DATA - CARGO HANDLING SYSTEM

Subsystem Name	WUC	Task Type	Failure Rate/ 1000 hr	MMH/ Task	Crew Size	LMT	Mission Affecting Rate/ 1000 hrs
Cargo handling (inspect)	2001	On aircraft repair	100.0	0.4797	1	0.4797	-
Cargo handling (inspect)	2002	On aircraft repair	3.3	0.9906	1	0.9906	-
Hoist drive assembly (service-oil)	2003	On aircraft repair	5.584	0.2535	1	0.2535	-
Hoist drive assembly (removal and replacement)	2004	Unsched. removal & replace.	1.9570	1.1895	2	0.9555	0.1370
Brake assembly (removal and replacement)	2005	Unsched. removal & replace.	0.1390	1.8330	2	1.5210	-
Control valve unit (R&R modified valve)	2006	Unsched. removal & replace.	0.7500	0.5460	1	0.5460	-
Control valve unit (R&R shutoff valve)	2007	Unsched. removal & replace.	0.4000	0.5460	1	0.5460	-
Tach generator (removal and replacement)	2008	Unsched. removal & replace.	0.1650	0.7800	1	0.7800	-
Winch assembly (clean)	2009	On aircraft repair	20.0	0.4875	1	0.4875	-
Winch assembly (removal and replacement)	2010	Unsched. removal & replace.	0.670	2.1840	2	1.170	-
Winch assembly (tear down/build up quick change package)	2011	On aircraft repair	0.798	4.6800	3	2.5155	-
Winch assembly (service bevel gearboxes)	2012	On aircraft repair	4.8	0.5070	1	0.5070	-
Winch assembly (service-grease ball spline)	2013	On aircraft repair	1.1	0.7605	1	0.7605	-

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TABLE LIX. Continued

Subsystem Name	WUC	Task Type	Failure Rate/1000 hr	MMH/Task	Crew Size	EMT	Mission Affecting Rate/1000 hrs
Winch assembly (remove, inspect chip detector)	2014	On aircraft repair	1.280	0.4680	1	0.4680	-
Winch assembly (R&R drum traversing wheels)	2015	Unsched. removal & replace.	0.1000	1.0530	1	1.0530	-
Winch assembly (repl bevel gear-box oil seals)	2016	Unsched. removal & replace.	0.4400	5.8695	3	3.1395	-
Winch assembly (repl side load beam wear strips)	2017	Unsched. removal & replace.	0.450	2.3010	2	1.8330	-
Cable cutter assembly (rem & repl cable cutter)	2018	Unsched. removal & replace.	0.278	1.9110	3	1.0140	-
Cable cutter assembly (sched repl of cartridge/ignitors)	2019	Scheduled removal	0.278	0.7488	2	0.5070	-
Tension member (rem & repl tension members)	2020	Unsched. removal & replace.	0. 00	1.9560	2	1.1700	0.023
Signal reel assembly (rem & repl signal reel assembly)	2021	Unsched. removal & replace.	0.3613	1.0725	2	0.6435	0.010
Signal reel assembly (replace signal conductor)	2022	Unsched. removal & replace.	0.150	1.2090	1	1.2090	-
Signal reel assembly (repl ribbon tape cartridge)	2023	Unsched. removal & replace.	0.050	1.0725	1	1.0725	-
Signal reel assembly (rem & repl pneumatic valve)	2024	Unsched. removal & replace.	0.3360	0.5070	1	0.5070	-
Coupling assembly (clean)	2025	On aircraft repair	50.0	0.4680	1	0.4680	-
Coupling assembly (rem & repl coupling assembly)	2026	Unsched. removal & replace.	0.9100	0.3510	2	0.2925	0.024

TABLE I.III. Continued

Subsystem Name	WUC	Task Type	Failure Rate/1000 hr	MMH Task	Crew Size	EXT	Mission Affecting Rate/1000 hr
Coupling assembly (rem & repl solenoid assembly)	2027	Unsched. removal & replace.	0.128	1.4004	1	1.4040	-
Coupling assembly (repl & adjust switch(es))	2028	Unsched. removal & replace.	0.528	1.3065	1	1.3065	-
Control panel (removal and replacement)	2029	Unsched. removal & replace.	0.50	0.2535	1	0.2535	0.100
Control panel (repair - replace switch)	2030	Unsched. removal & replace.	0.50	0.2340	1	0.2340	-
Indicators (rem & repl an indicator)	2031	Unsched. removal & replace.	2.5	0.2535	1	0.2535	-
Hoist control grip (replace faulty switch)	2032	Unsched. removal & replace.	1.0	0.4290	1	0.4290	-
Support & span positioning (rem & repl cable/pulley)	2033	Unsched. removal & replace.	0.008	0.6825	1	0.6825	-
Support & span positionging (rem & repair, repl articulated pneu duct)	2034	Unsched. removal & replace.	0.825	0.7605	1	0.7605	-
Support & span positioning sys (repair, repl hinged track section)	2035	On aircraft repair	0.005	1.3065	2	0.8385	-
Actuator/gearbox (removal and replacement)	2036	Unsched. removal & replace.	0.058	0.7410	1	0.7410	-
Position lock actuator (removal & replacement)	2037	Unsched. removal & replace.	0.0172	0.7410	2	0.7020	-
Load isolator (recharge nitrogen chamber)	2038	On aircraft repair	7.2	0.4485	1	0.4485	-
Load isolator (removal and replacement)	2039	Unsched. removal & replace.	2.000	1.1700	3	0.8190	-

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TABLE LIX. Continued

Subsystem Name	WUC	Task Type	Failure Rate/ 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate/ 1000 hr
Visual augmentation system (inspect)	2040	On aircraft repair	100.0	0.0195	1	0.0195	-
Camera & lens assembly (clean lens cover)	2041	On aircraft repair	80.0	0.1560	1	0.1560	-
Camera & lens assembly (repl VAS camera unit)	2042	Unsched. removal & replace.	0.001	1.0335	3	0.8970	-
Camera lens assembly (repl lens assembly)	2043	Unsched. removal & replace.	0.001	2.0475	3	1.6575	-
VAS display unit (removal and replacement)	2044	Unsched. removal & replace.	0.001	0.3510	1	0.3510	-

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TABLE LX. HLH INPUT DATA - DRIVE SYSTEM

Subsystem Name	WUC	Task Type	Failure Rate/ 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate/ 1000 hr
Aft transmission (clean main indicating screen)	2101	On aircraft repair	0.128	0.5070	1	0.5070	-
Aft transmission (clean secondary indicating screen)	2102	On aircraft repair	0.128	0.5070	1	0.5070	-
Chip detector (examine and clean)	2103	On aircraft repair	0.66	0.5265	1	0.5265	-
Aft transmission (inspection)	2104	On aircraft repair	100.0	0.1170	1	0.1170	-
Aft transmission (inspection)	2105	On aircraft repair	3.3	0.1950	1	0.1950	-
Aft transmission (remove, build-up, replace)	2106	Unsched. removal & replace.	0.472	38.9961	5	29.4762	0.395
Aft transmission rem & repl temp probe	2107	Unsched. removal & replace.	0.378	0.1560	2	0.1170	-
Press transducer (probe) primary (rem & repl)	2108	Unsched. removal & replace.	0.357	0.4485	1	0.4485	-
Oil cooler (removal and replacement)	2109	Unsched. removal & replace.	0.632	5.0115	3	3.3735	-
Blower (oil cooler) (rem & repl)	2110	Unsched. removal & replace.	0.196	2.3790	3	1.5600	-
Aux lube pump (removal and replacement)	2111	Unsched. removal & replace.	0.011	0.5265	1	0.5265	-
Main lube pump (removal and replacement)	2112	Unsched. removal & replace.	0.035	0.8385	1	0.8385	-
Main lube pump (rem & repl pump filter)	2113	Unsched. removal & replace.	0.164	0.6435	1	0.6435	-

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TABLE LX. Continued

Subsystem Name	WUC	Task Type	Failure Rate/ 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate/ 1000 hr
Aft xmsn accessory assembly (replace accessory seals)	2114	Unsched. removal & replace.	2.877	2.6520	2	2.1450	-
Combining xmsn (clean indicating screen (primary))	2115	On aircraft repair	0.66	0.5070	1	0.5070	-
Combining xmsn (clean indicating screen secondar'y)	2116	On aircraft repair	0.66	0.5070	1	0.5070	-
Combining xmsn (inspection)	2117	On aircraft repair	100.0	0.1170	1	0.1170	-
Combining xmsn (inspection)	2118	On aircraft repair	3.3	0.6630	1	0.6630	-
Combining xmsn (rem build-up and replace out the top)	2119	Unsched. removal & replace.	0.342	20.0460	4	9.7110	0.385
Combining xmsn (rem build-up and replace out the back)	2120	Unsched. removal & replace.	0.342	28.3140	3	15.1320	-
Combining xmsn (rem build-up and replace thru floor)	2121	Unsched. removal & replace.	0.342	16.3800	3	9.2430	-
Combining xmsn (rem & repl temp probe)	2122	Unsched. removal & replace.	0.378	0.1560	2	0.1170	-
Combining xmsn (rem & repl press xducer-primary)	2123	Unsched. removal & replace.	0.357	0.2925	1	0.2925	-
Combining xmsn oil cooler (rem & repl)	2124	Unsched. removal & replace.	0.632	4.4655	3	2.6325	-
Combining xmsn (rem & repl fan-(oil cooled))	2125	Unsched. removal & replace.	0.196	1.5990	3	1.4040	-
Combining xmsn (rem & repl clutch assembly)	2126	Unsched. removal & replace.	0.200	3.5880	3	2.1283	-

TABLE LX. Continued

Subsystem Name	WUC	Task Type	Failure Rate/ 1000 hr	MMH/ Task	Crew Size	EMT	Mission Affecting Rate/ 1000 hr
Combining xmsn (rem & repl filter element (primary))	2127	Unsched. removal & replace.	0.115	0.5655	2	0.5265	-
Combining xmsn (rem & repl oil pump (primary))	2128	Unsched. removal & replace.	0.047	3.1005	3	1.7355	-
Combining xmsn (rem & repl rotor brake)	2129	Unsched. removal & replace.	1.6760	2.6910	3	1.7940	0.041
Combining xmsn (rem & repl rotor brake disc)	2130	Unsched. removal & replace.	0.068	4.3485	3	2.5333	-
#1 & #2 shafting & couplings - R/H Engine (inspection)	2131	On aircraft repair	100.0	0.1053	1	0.1053	-
Engine shafting (inspection)	2132	On aircraft repair	100.0	0.2613	1	0.2613	0.162
#1 shaft to LH engine (inspection)	2133	On aircraft repair	100.0	0.1560	1	0.1560	-
#2 engine shaft assembly replace	2134	Unsched. removal & replace.	0.512	2.5896	2	1.4040	-
Engine shafting (inspection)	2135	On aircraft repair	3.3	0.4134	1	0.4134	-
#1 & #2 shafting & coupling - R/H Engine (inspection)	2136	On aircraft repair	3.3	0.2262	1	0.2262	-
#1 & #2 shafting & coupling - L/H Engine (inspection)	2137	On aircraft repair	3.3	0.2262	1	0.2262	-
#1 shaft to R/H Engine (inspection)	2138	On aircraft repair	3.3	0.1872	1	0.1872	-
#1 shaft to L/H Engine (inspection)	2139	On aircraft repair	3.3	0.1872	1	0.1872	-

TABLE LX. Continued

Subsystem Name	WUC	Task Type	Failure Rate/ 1000 hr	MMH Task	Crew Size	EMT	Mission Affecting Rate/ 1000 hr
Sync shaft bearings forward xmsn to comb (lube)	2140	On aircraft repair	3.3	0.2262	1	0.2262	-
Sync shaft bearings comb to aft rotor (lube)	2141	On aircraft repair	3.3	0.0468	1	0.0468	-
Engine shafting bearings, left, right, center engines (lube)	2142	On aircraft repair	3.3	0.1404	1	0.1404	-
Sync shafting forward xmsn to comb xmsn (inspection)	2143	On aircraft repair	100.0	0.3822	1	0.3822	0.123
Sync shafting comb xmsn to aft rotor xmsn (inspec)	2144	On aircraft repair	100.0	0.1248	1	0.1248	0.123
Sync shafting forward xmsn to comb xmsn (inspection)	2145	On aircraft repair	3.3	0.7800	1	0.7800	-
Sync shafting comb xmsn to aft rotor xmsn (inspec)	1246	On aircraft repair	3.3	0.2886	1	0.2886	-
Slant shaft No. 11 (rem & repl)	2147	Unsched. removal & replace.	0.1951	3.8415	3	2.0865	-
Slant shaft No. 10 (rem & repl)	2148	Unsched. removal & replace.	0.1951	5.3430	3	2.8275	-
Sync shaft bearings (removal and replacement)	2149	Unsched. removal & replace.	0.782	2.1283	2	1.9305	-
Sync shaft mount (removal and replacement)	2150	Unsched. removal & replace.	2.660	0.7020	2	0.5070	0.131
Drive shafting (burnish out nicks, gouges, scratches)	2151	On aircraft repair	4.053	0.7800	2	0.8580	-
Forward xmsn (clean main indicating screen)	2152	On aircraft repair	0.128	0.5070	1	0.5070	-

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TABLE LX. Continued

Subsystem Name	WUC	Task Type	Failure Rate/ 1000 hr	MMH Task	Crew Size	EMT	Mission Affecting Rate/ 1000 hr
Forward xmsn (clean secondary indicating screen)	2153	On aircraft repair	0.128	0.5070	1	0.5070	-
Chip detector (examine and clean)	2154	On aircraft repair	0.66	0.5265	1	0.5265	-
Forward xmsn (inspection)	2155	On aircraft repair	100.0	0.1170	1	0.1170	-
Forward xmsn (inspection)	2156	On aircraft repair	3.3	0.1950	1	0.1950	-
Forward xmsn (rem build-up, replace)	2157	Unsched. removal & replace.	0.472	38.9961	5	29.4762	0.395
Forward xmsn (rem & repl temp probe)	2158	Unsched. removal & replace.	0.378	0.1560	2	0.1170	-
Press transducer (probe) primary (rem & repl)	2159	Unsched. removal & replace.	0.357	0.4485	1	0.4485	-
Oil cooler (rem & repl)	2160	Unsched. removal & replace.	0.632	5.0115	3	3.3735	-
Blower (oil cooler) (rem & repl)	2161	Unsched. removal & replace.	0.196	2.3790	3	4.5600	-
Auxiliary lube pump (rem & repl)	2162	Unsched. removal & replace.	0.011	0.5265	1	0.5265	-
Main lube pump (rem & repl)	2163	Unsched. removal & replace.	0.035	0.8385	1	0.8385	-
Main lube pump (rem & repl pump filter)	2164	Unsched. removal & replace.	0.164	0.6435	1	0.6435	-
Forward xmsn accessory assy (repl accessory seals)	2165	Unsched. removal & replace.	2.877	2.6520	2	2.1450	-

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APPENDIX VI
DOCUMENTATION OF MODIFICATIONS TO
GOVERNMENT-FURNISHED SIMULATION MODEL

The following changes have been made to the Government-furnished simulation model:

1   In modifying the model to accommodate a platoon size of up to 24 aircraft, several reallocations of resources were made. The reallocation of Blocks (BLO) and Fullword Save Values (FSV) should not constrain any future runs or minor model changes.

If it is desired to keep the model core requirements at a minimum, a reallocation of Transactions (XAC) to 400 and Common (COM) to 175,000 will support up to 11 aircraft in most maintenance concepts and mission profiles.

If execution error 599 (limits of core exceeded) is encountered, increase the total core request for the job step by 50,000 bytes.

If execution error 468 or 469 (number of transactions exceeded) is encountered, increase the reallocation of transactions (XAC) by 100, Common (COM) by 50,000, and the total core request for the job step by 50,000 bytes.

2   It is advised that for early applications of the model (debugging) a delimiter be used in column 19 of the simulate card. A value of 6 was used in most analyses, which limited the simulation to 6 CPU minutes.

3   The UNLIST card was added to the original model to suppress model listing.

4   Variable 9 has been generalized with respect to run duration.

5   Variable 10 generalizes the calendar PMP inspection to be a function of input X195 (the calendar inspection interval) rather than a constant in the variable definition.

6   Variable 11 is a modified variable used in the the tests for calendar PMP. It is generalized to be a function of input X195. Parameter 47 (P47) contains the initial time since last calendar PMP for the aircraft. Subsequent to induction of an aircraft into the PMP routine, the P47 value is reset to zero.

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①   REALLOCATE BLO,1350                                    00000100
     REALLOCATE STO,90                                      00000200
     REALLOCATE QUE,70                                      00000300
     REALLOCATE LOG,60                                      00000400
     REALLOCATE FUN,50                                      00000500
     REALLOCATE TAB,20                                      00000600
     REALLOCATE SVA,20                                      00000700
     REALLOCATE VAR,250                                     00000800
     REALLOCATE FSV,1000                                    00000900
     REALLOCATE HSV,90                                      00001000
     REALLOCATE CHA,60                                      00001100
     REALLOCATE GRP,70                                      00001200
     REALLOCATE FUS,5                                       00001300
①   REALLOCATE MAS,10                                      00001400
①   REALLOCATE XAC,600                                     00001500
②   REALLOCATE COM,250000                                  00001600
     SIMULATE                                               00001700
③   JNLIST                                                 00001800
 1   VARIABLE     P2+C5   MISSION MATRIX COLUMN NUMBERS     00001900
 2   VARIABLE     P11+C5  MISSION MATRIX NUMBERS            00002000
 3   VARIABLE     P11+C9  "MISSION FLYING HOUR GOAL" SWITCH NUMBERS  00002100
 4   VARIABLE     P11+C11 "MISSION FLYING HOURS" SAVEVALUE NUMBERS   00002200
 5   VARIABLE     P4+C5   "AIRCRAFT NOT AVAILABLE WHEN CALLED" MISSION XH  00002300
 6   VARIABLE     P4+C5   "MISSION LAUNCH GATE" SWITCH NUMBERS  00002400
 7   VARIABLE     P11+C13 "MISSION CYCLIC FLYING HOUR" SWITCH NUMBERS  00002500
④8   VARIABLE     P4+C13  "MISSION CYCLIC FLYING HOUR" SWITCH NUMBERS  00002600
 9   VARIABLE     MX1(5,1)+C2                               00002700
⑤  * CHANGES TO INCORPORATE CALENDAR INSPECTION/INTERVALS   00002710
  10 VARIABLE     (RV1+1000+RV1)#X195  INITIAL DAYS SINCE PMP  00002800
⑥ 11 VARIABLE     (P37+(C1/240))#X195  DAYS SINCE PMP      00002900
  13 VARIABLE     RV1+1000+RV1  SIX DIGIT RANDOM NUMBER     00003000
  14 VARIABLE     P4+C5   MISSION STORE & LAUNCH GATE SWITCH NUMBERS  00003100
  15 VARIABLE     P4+C13  "MISSION CYCLIC FLYING HOUR" SWITCH NUMBERS  00003200
  16 VARIABLE     P4+C19  NUMBER OF EACH MISSION FLOWN WITHOUT MA'S  00003300
  17 VARIABLE     P4+C24  SAVEVALUE NUMBERS - FLIGHT HOURS BY MISSION  00003400
  18 VARIABLE     FN8/2   ABORT FLIGHT TIME DURATION        00003500
  19 VARIABLE     (320-V29)#X240  TIME REMAINING CT 0800 NEXT DAY  00003600
  20 VARIABLE     C1#240  TIME OF DAY-TENTHS OF HOURS       00003700
  21 VARIABLE     P100+X1(1,10)  DOWNTIME FOR ALTERNATE DAILY  00003800
  22 VARIABLE     FN6/10000  MANPOWER REQUIRED              00003900
  23 VARIABLE     FN6/100000  WORK CENTER                   00004000
  24 VARIABLE     FN6#100  MEAN ELAPSED TIME TO PERFORM EVENT  00004100
  25 VARIABLE     P17+9   EVENT STORE NUMBER                00004200
  27 VARIABLE     P2+32   WORK CENTER QUEUE & 1ST SHIFT STORE NUMBERS  00004300
  28 VARIABLE     P2+45   2ND SHIFT WORK CENTER STORE NUMBER  00004400
  29 VARIABLE     P224+20  MAN HOURS X 100                  00004500
  30 VARIABLE     P2+9    SAVEVALUE NUMBERS OF MH VS. WORK CENTER  00004600
  31 VARIABLE     P2+45-P4+11  SKILL LINE NUMBERS           00004700
  32 VARIABLE     S4#V10  MATRIX COLUMN NUMBER-MH/PMT ELAPSE TIME  00004800
  33 VARIABLE     C2+SV1+48  MATRIX ROW NUMBER-MH OR PMT,MEN  00004900
  34 VARIABLE     C3+SV1+48  MATRIX ROW NUMBER-MH OR PMT,TIME/MAN  00005000
  35 VARIABLE     220-C1#240  TIME REMAINING - SECOND SHIFT  00005100
  36 VARIABLE     P3+P8   MAN HOURS X 100                   00005200
  37 VARIABLE     P2+24   SAVEVALUE NUMBERS-MH/PMT MAN HOURS BY WORK CEN  00005300
```

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#	Type	Expression / Description	Code
35	VARIABLE	160-D1/240 TIME REMAINING - FIRST SHIFT	00005400
37	VARIABLE	P6-P20 EMT IN EXCESS OF CURRENT SHIFT LENGTH	00005500
03	VARIABLE	P2+28 SAVEVALUE NUMBERS, NUMBER OF P2 MA'S/EVENT	00005600
01	VARIABLE	P19+39 SAVEVALUE NUMBERS, NUMBER OF MA'S/P19 EVENT	00005700
02	VARIABLE	P3+100+P5 ELEMENT NUMBER	00005800
05	VARIABLE	FN37/K1000 PROBABILITY OF R & R	00005900
05	VARIABLE	P22/100 ELEMENT SYSTEM NUMBER	00006000
07	VARIABLE	P1+25 PARAMETER IDENTIFICATION - WORK CENTER	00006100
09	VARIABLE	FN60/10000 OS/GS WORK CENTER	00006200
39	VARIABLE	FN60@10000/100 ORGANIZATIONAL SECONDARY WORK CENTER	00006300
59	VARIABLE	FN60@100 ORGANIZATIONAL PRIMARY WORK CENTER	00006400
51	VARIABLE	P1+29 PARAMETER IDENTIFICATION - M.P.	00006500
52	VARIABLE	FN62/10000 OS/GS MANPOWER (M.P.)	00006600
53	VARIABLE	FN62@10000/100 ORGANIZATIONAL SECONDARY M.P.	00006700
54	VARIABLE	FN62@100 ORGANIZATIONAL PRIMARY M.P.	00006800
55	VARIABLE	K0+(FN53@1000@FN56+500)/1000 MEMT - R & R	00006900
56	VARIABLE	P6+10 UNITS CONVERSION	00007000
57	VARIABLE	(MX1(4,5)@FN55+500)/1000 MEAN OSE DELAY TIME	00007100
59	VARIABLE	P2+37 SAVEVALUE NUMBERS-SCHEDULED MMH BY WORK CENTER	00007200
59	VARIABLE	1+3V8 MATRIX COLUMN IDENTIFICATION	00007300
60	VARIABLE	M1+K10 UNITS CONVERSION	00007400
61	VARIABLE	FN65 DELAY TIME TO OBTAIN PART	00007500
62	VARIABLE	V8V3@3-V8V3@4 VDRS TEST VALUE	00007600
63	VARIABLE	P2+K49 SAVEVALUE NUMBERS-CANNIBALIZATION MMH BY WORK	00007700
64	VARIABLE	P1+21 TIME WHEN PART BECOMES AVAILABLE	00007800
65	VARIABLE	(FN63/1000@FN56+K500)/1000 OFF-EQUIPMENT RPR MEMT	00007900
66	VARIABLE	FN63/1000 OFF-EQUIPMENT REPAIR TIME	00008000
57	VARIABLE	P29+K56 STORE INDEX FOR GS WORK CENTERS	00008100
69	VARIABLE	P29+K45 QUEUE INDEX FOR GS WORK CENTERS	00008200
69	VARIABLE	P29+K63 SAVEVALUE NUMBERS FOR WORK CENTER TOTAL MMH'S	00008300
70	VARIABLE	P31@P8 MAN HOURS X 100	00008400
71	VARIABLE	FN37@K1000 PERCENT ELEMENTS REPAIRED @ GS	00008500
72	VARIABLE	FN47/1000 PERCENT ELEMENTS NRTS (1-8) & GS	00008600
73	VARIABLE	FN48@1000 PERCENT ELEMENTS NRTS (9) @ GS	00008700
73	VARIABLE	P3+MX3(@2,4)-K1 DELAY TIME IN MPC/SHIFT ROUTINE	00008800
75	VARIABLE	P8-P21 NUMBER OF MEN STILL REQUIRED	00008900
77	VARIABLE	P6+K1 SECOND SHIFT WORK CENTER CHAIN/STORE INDEX	00009000
79	VARIABLE	P6+K32 FIRST SHIFT WORK CENTER CHAIN/STORE INDEX	00009100
79	VARIABLE	P3+P8 TIME INTERVAL	00009200
80	VARIABLE	P2+K8+(K3-P18) MANPOWER REDUCTION MATRIX INDEX	00009300
81	VARIABLE	K21+P8+K11(K3-P18) MANPOWER CONTROL CHAIN/STORE INDEX	00009400
82	VARIABLE	P9-P1@P3 MANPOWER REDUCTION CONTROL TIME	00009500
83	VARIABLE	P6-P21 MANPOWER DIFFERENCE	00009600
94	VARIABLE	MX1(5,2)+MX1(5,3)+MX1(5,4) MAN HOUR SUMMATION	00009700
135	VARIABLE	FN31/1000 ELEMENT PROBABILITY OF NOR	00009800
136	VARIABLE	FN54@100 MANPOWER - ON EQUIPMENT REPAIR	00009900
137	VARIABLE	FN54/K100 MANPOWER - ON EQUIPMENT REPAIR	00010000
139	VARIABLE	(FN53/1000@FN56+500)/1000 EMET-ON EQUIPMENT REPAIR	00010100
139	VARIABLE	FN52/1000 PROBABILITY OF REPAIR BY GS	00010200
140	VARIABLE	FN52@1000 PROBABILITY OF REPAIR BY OS	00010300
131	VARIABLE	P29+K77 STORE INDEX FOR OS WORK CENTERS	00010400
142	VARIABLE	P29+56 QUEUE INDEX FOR OS WORK CENTERS	00010500
143	VARIABLE	P29+85 SAVEVALUE NUMBERS FOR WORK CENTERS TOTAL MMH'S	00010600
134	VARIABLE	CH1+MSARM14 AIRCRAFT AVAILABLE NEXT AM	00010700
135	VARIABLE	240-P3-P2 NON-SHIFT HOURS	00010800

7   Floating point variable (Fvariable) 146 has been modified
due to the increased number of aircraft the model now encom-
passess.   If it is desired to operate the model "on condition",
use a dummy input as follows:

Initial   MI6(26, 1-24), K30000

8   Variable 147 has been generalized to make it a function of
the input parameter save value X189 (the PMP interval).   This
variable is employed in the model's PMP logic test.   It was
felt that the model should be suitable for changes in PMP
intervals without logic change.   Thus, this variable was de-
fined to make the PMP logic test functionally dependent upon
an input rather than logically dependent upon a constant, as
was previously the case.

9   Variable 148 was generalized in the same manner as vari-
able 147.   Variable 148 is employed in the PMI logic tests
within the model.   Again, it was felt that all PMI logic
should be generalized to be a function of input parameters,
rather than allowing logic to be dependent functionally upon
a constant within the coding of the model.

10   Variable 150 has been modified, due to the increase in
model size to accommodate a platoon size of 24 aircraft.

⑦ 136	VARIABLE	(446(26,P15)*RN1/1000)		00010900
			USE (446(16,P15)*RN1/1000) WITH TBO RUN	00011000
⑧ 137	VARIABLE	P800*199	GENERAL	00011100
⑨ 138	VARIABLE	P800*190	GENERAL	00011200
139	VARIABLE	446(210,P12)*10=200	TIME-ELEMENT REPLACEMENT DUE	00011300
⑩ 150	VARIABLE	P80/10+446(25,*12)	NEXT TIME REPLACEMENT DUE	00011400
151	VARIABLE	P18K200	SAVEVALUE NO-MISSIONS CALLED EA ACFT/MONTH	00011500
152	VARIABLE	P18K500	SAVEVALUE NO-MISSIONS CALLED EA ACFT/SIMULA	00011600
153	VARIABLE	P18K225	SAVEVALUE NO-MISSIONS COMPLETED EA ACFT/MON	00011700
154	VARIABLE	P18K925	SAVEVALUE NO-MISSIONS COMPLETED EA ACFT/SIM	00011800
155	VARIABLE	P18K250	SAVEVALUE NO-MISSION FLIGHT HR EA ACFT/MONTH	00011900
156	VARIABLE	P18K950	SAVEVALUE NO-MISSION FLIGHT HR EA ACFT/SIMU	00012000
157	VARIABLE	P18K275	SAVEVALUE NO-NUMBER OF PREFLIGHTS EA ACFT/MO	00012100
158	VARIABLE	P18K975	SAVEVALUE NO-NO OF PREFLIGHTS EA ACFT/SIMU	00012200
159	VARIABLE	P18K300	SAVEVALUE NO-PREFLIGHT MMH'S X 100 EA ACFT	00012300
160	VARIABLE	P18K900	SAVEVALUE NO-PREFLIGHT MMH'SX100, EA ACFT/SI	00012400
161	VARIABLE	P18K325	SAVEVALUE NO-NO OF DAILY'S EA ACFT/MONTH	00012500
162	VARIABLE	P18K925	SAVEVALUE NO-NO OF DAILY'S, EA ACFT/SIMU	00012600
163	VARIABLE	P18K350	SAVEVALUE NO-DAILY MMH'SX100, EA ACFT.MONTH	00012700
164	VARIABLE	P18K950	SAVEVALUE NO-DAILY MMH'SX100, EA ACFT MON	00012800
165	VARIABLE	P18+375	SAVEVALUE NO-PMH'S BY AIRCRAFT S/N / MONTH	00012900
166	VARIABLE	P18+975	SAVEVALUE NO-PMH'S BY AIRCRAFT S/N/SIMULATION	00013000
167	VARIABLE	P18+800	SAVEVALUE NO-MONTHLY PMI MAN HR BY ACFT S/N	00013100
168	VARIABLE	P18+1000	SAVEVALUE NO-SIMULATION PMI MAN HR BY ACFT S	00013200
169	VARIABLE	P18+825	SAVEVALUE NO-PMD'S BY ACFT S/N/MONTH	00013300
170	VARIABLE	P18+1025	SAVEVALUE NO-PMD'S BY ACFT S/N/SIMULATION	00013400
171	VARIABLE	P18+850	SAVEVALUE NO-PMD MMH BY ACFT S/N/MONTH	00013500
172	VARIABLE	P18+1050	SAVEVALUE NO-PMD MMH BY ACFT S/N/SIMULATION	00013600
173	VARIABLE	P18+875	SAVEVALUE NO-JMH BY ACFT S/N/MONTH	00013700
174	VARIABLE	P18+1075	SAVEVALUE NO-JMH BY ACFT S/N/SIMULATION	00013800
175	VARIABLE	P18+900	SAVEVALUE NO-SMH BY ACFT S/N / MONTH	00013900
176	VARIABLE	P18+1100	SAVEVALUE NO-SMH BY ACFT S/N / SIMULATION	00014000
177	VARIABLE	P5+525	SAVEVALUE NO-SCHEDULED MAINT MH BY ACFT S/N/MO	00014100
178	VARIABLE	K500+P5	PARAMETERS 1-4 OFFSET VALUES FOR SAVEVALUE IN	00014200
179	VARIABLE	K550+P5	PARAMETERS 1-4 OFFSET VALUES FOR SAVEVALUE IN	00014300
180	VARIABLE	K600+P5	PARAMETERS 1-4 OFFSET VALUES FOR SAVEVALUE IN	00014400
181	VARIABLE	K650+P5	PARAMETERS 1-4 OFFSET VALUES FOR SAVEVALUE IN	00014500
182	VARIABLE	X01+X02+X03+X04	SAVEVALUE SUMMATION	00014600
183	VARIABLE	X325+X375+X25+X075	SAVEVALUE SUMMATION	00014700
184	VARIABLE	P18+1175	SAVEVALUE NO-SIMULATION-SCHEDULED MA'S BY AC	00014800
185	VARIABLE	P18+575	SAVEVALUE NO-MONTHLY-SCHEDULED MA'S BY ACFT	00014900
186	VARIABLE	P18+1200	SAVEVALUE NO-SIM ELAPSED UNSCH MAINT ACFT	00015000
187	VARIABLE	P18+600	SAVEVALUE NO-MONTHLY ELAPSED UNSCH MAINT A/C	00015100
188	VARIABLE	P5+1125	SAVEVALUE NO-SIMULATION TOTAL SCHED MAINT MH	00015200
189	VARIABLE	P18+550	SAVEVALUE NO-MONTHLY SCHED MAINT MH BY ACFT	00015300
190	VARIABLE	P18+1150	SAVEVALUE NO-SIMULATION SCHED MAINT MH BY AC	00015400
191	VARIABLE	P20+P22	MAN HOURS X 100	00015500
192	VARIABLE	P18+1225	SAVEVALUE NO-SIMULATION DIR MAINT MH BY ACFT	00015600
193	VARIABLE	K625+P6	SAVEVALUE NO-MONTHLY DIR MAINT MH BY ACFT S	00015700
194	VARIABLE	K1250+P18	SAVEVALUE NO-SIMULATION NORM TIME (.1 HR)	00015800
195	VARIABLE	K650+P18	SAVEVALUE NO-MONTHLY NORM TIME (.1 HR)	00015900

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11   Variables 206 through 211 have been modified to provide
new save value numbers for test hop flight hours, aborted
flights, and aborted hours. This change was made necessary
by modifying the model to handle 24 aircraft.

12   Floating point variables 214 and 215 have been modified
to use the new save value numbers for aborted and test hop
flight hours in the maintenance man-hour per flight-hour cal-
culation and platoon flight time summation, respectively.

13   Floating point variable 216 has been modified to make
the availability dependent upon input definition of the run
duration, rather than functionally dependent upon a constant
within the variable.

This has been accomplished by incorporating MX1 (5,1) (run
duration) in the variable statement in place of the original
value of 6720. Furthermore, this variable has been modified
to handle NORS time by inclusion of X*3.

14   Floating point variable 217 has also been modified to
generalize the availability for the platoon with respect to
the number of aircraft per platoon and the run duration of
the simulation, by use of X191 and MX1(5,1), respectively.
Also, this variable required modification to allow for the
accountability of NORS downtime which was previously not
considered in the baseline UH-1 Government-furnished model.
The NORS delays are administered by inclusion of X1425 in the
variable definition.

15   Floating point variable 220 has been modified to employ
the new save value number for platoon-aborted flight hours in
the availability calculation.

16   Variable 231 has been defined to generate a six-digit
random number module X189, which is the PMP interval. This
variable is employed in routine ZZB of the model, to initial-
ize the P40 value that is representative of the initial air-
frame values of each aircraft. This variable provides
generality in that the modulization based on X189, which is an
input parameter, enables the airframes to be initialized with
values ranging from 1/10 of an hour to 99,999.9 hours. If the
situation were ever to arise that a PMP interval of greater
than 100,000 hours was desired, this variable would require
redefinition.

17   Variable 232 has been established to define save values
for the accounting of NORS per aircraft. P14 keeps track of
the tail number of each aircraft and, with the constant K 1400
added to it, ensures save values in the range from 1401 to
1424 for NORS accounting.

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```
204   VARIABLE   <1550+P18   SAVEVALUE NO-SIMULATION TEST MSPR BY ACFT   00016000
205   VARIABLE   <750+P18    SAVEVALUE NO-MONTHLY TEST MSPR BY ACFT S/N   00016100
206   VARIABLE   <1375+P14   TEST MSP FLT.ABS SAVE NO.S-TOTAL            00016200
207   VARIABLE   <775+P13    TEST MSP FLT.ABS SAVE NO.S-MONTHLY          00016300
208   VARIABLE   <1375+P14   FLT.ABORTS- SAVE NO.R - TOTAL              00016400
209   VARIABLE   <1825+P14   FLT.ABORTS- SAVE NO.S - MONTHLY            00016500
210   VARIABLE   <1500+P18   ABORT FLIGHT HOURS- SAVE NOIS-TOTAL        00016600
211   VARIABLE   <1850+P18   ABORT FLIGHT HOURS- SAVE NOIS-MONTHLY      00016700
212   VARIABLE   (X61+X62)*10   SAVEVALUE SUMMATION & UNITS CONVERSION   00016800
213   VARIABLE   P7/(X63+X64+X65)   CONVERSION TO RATIO                 00016900
214   VARIABLE   (X550+X575)*10/(X275+X900+X1075)  AVAIL. CALC.          00017000
215   VARIABLE   X275+X900+X1075   SAVEVALUE SUMMATION                   00017100
216   FVARIABLE  (C1-X61+X65)*10000/C1   A/C AVAIL TIME                  00017200
217   FVARIABLE  (X191*C1-X675+X1825)*10000/(X191*C1)                    00017300
218   FVARIABLE  X61*10000/X62   ACFT MONTHLY AVAIL PERCENT MISSIONS COM  00017400
219   FVARIABLE  (X61+X62)*10000/X63   ACFT MONTHLY AVAIL. MISSION RATIO  00017500
220   FVARIABLE  (X250+X1850)*10000/X225  PLAT.MONTHLY AVAIL-MISS.RATIO   00017600
221   FVARIABLE  X250*10000/X225   PLATOON MONTHLY AVAIL. PERCENT MISS C  00017700
222   VARIABLE   P18+<325   SAVEVALUE NO-MONTHLY SCHED MAINT MH BY ACFT   00017800
223   VARIABLE   P18+<1125  SAVEVALUE NO-SIMULATION SCHED MAINT MH BY AC  00017900
224   VARIABLE   S1+S32+S30+S37                                          00018000
225   VARIABLE   (S31+S37)*S90                                           00018100
226   VARIABLE   (S31+S32)*S60                                           00018200
227   VARIABLE   (S30+S37)*S90                                           00018300
228   VARIABLE   (S30+S37)*S60                                           00018400
229   FVARIABLE  (X411/(X411+(X199/10)))*10000                           00018500
230   FVARIABLE  (X411/(X411+((X199/10)+X197)))*10000                    00018600
231   VARIABLE   (XV1+(10000&XV1)*X199                                   00018700
232   VARIABLE   P18+<1800                                               00018800
```

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18   Variable 234 has been defined to generalize the inter-
action between PMP interval, defined by input X189, and the
mission duration, defined through function table 4. This
variable established a window, so to speak, through which a
PMP inspection can be activated. For example, if X189, the
PMP interval, is 100 hours and the value chosen from function
table 4 is 2 hours, as a mission length, the value of V234 is
98 hours. This variable is then employed in the logic to test
if the time on the aircraft is greater than or equal to 98
hours, yet less than 100 hours. If this is the case, the air-
craft requires and, therefore, receives a PMP inspection. The
original logic of the model employed constants in these tests,
which meant that the model functionally and logically was
dependent upon the PMP interval and mission length of the UH-1
aircraft. Thus, this area was modified to provide generality
to help accomplish the required comparative analysis.

19   Variable 235 has been defined to perform a function
similar to that of variable 234, except that variable 235 is
employed to define the window through which the PMI inspection
logic is accessible.

20   Variable 236 defines a window by which the calendar PMP
logic is activated.

21   Variable 237 generates a -720 for use in the checks for
daily maintenance whenever 3 nonflying days in a row are
encountered.

22   Variable 239 tabulates the time since last daily inspec-
tion.

23   Variable 240 established save values to count the number
of dailies.

24   Variable 241 establishes save values for tabulating
missions completed.

25   Boolean variable (BVARIABLE) 17 has been generalized
through the use of input X194 - the number of ready aircraft
required to hold maintenance personnel overtime - rather than
a constant in the variable definition.

26   Boolean variable 19 is a new variable which has been
defined to preclude maintenance being performed during off-
shift hours.

27   Boolean variable 20 has been added to ensure that only
flying aircraft get dailies (except when 72 nonflying hours
expire).

28	VARIABLE	X199-PV4	GENERAL	00019900
35	VARIABLE	X195-PV2	GENERAL	00019000
36	VARIABLE	X135-X196	PWR CALENDAR WINDOW	00019010
37	VARIABLE	720-1440	DAILY ROUTINE	00019011
238	VARIABLE	51-P85		00019020
239	VARIABLE	P1+125	DIALY COUNT	00019050
231	VARIABLE	P1+225	MISSING COMPLETED	00019060
1	3VARIABLE	V20'3'250	DUMMY V1 POST FLIGHT	00019100
2	3VARIABLE	V20'3'250	DUMMY V1 RESPOT	00019200
3	3VARIABLE	V20'L'<1660+V20'3'<50		00019300
7	3VARIABLE	P25'P'<1350		00019400
11	3VARIABLE	V20'L'*230		00019500
13	3VARIABLE	V20'L'<220+V20'3'<185	DAILY OUT OF MAINT.	00019600
17	3VARIABLE	P17'P'<9		00019700
19	3VARIABLE	V104'L'X194+P9'E'1+P26'E'1	OVERTIME TEST	00019800
9	3VARIABLE	P13'P'2+P19'E'5		00019900
0	3VARIABLE	V20'3'<60+V20'L'<220+L814	OFF SHIFT TEST CHECK	00020000
0	3VARIABLE	V20'3'<185+V250'3E'K720	FLYING AC GET DAILY	00020010
1	MATRIX	4,10,22		00020100
2	MATRIX	4,3,3		00020200
3	MATRIX	4,85,9		00020300
5	MATRIX	4,35,9		00020400

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28   Matrix 6 has been expanded to handle up to 24 aircraft and 24 TBO items.

29   Function table 2 has been modified by inclusion of Event 8 - PMI probability of success.

```
28─6   MATRIX    4,28,24                                               09020500
   1   MATRIX    X,15,13                                               09020600
   2   MATRIX    X,15,27                                               09020700
   3   MATRIX    X,17,11                                               09020800
   4   MATRIX    X,7,10                                                09020900
   5   MATRIX    X,45,9                                                09021000
   1   TABLE     P17,1,1,27   NUMBER INSPECTIONS PERFORMED             09021100
   2   TABLE     P9,0,1,11    FLIGHTS BY MISSION TYPE                  09021200
   3   TABLE     P17,1,1,27   NUMBER INSPECTIONS                       09021300
   4   TABLE     P19,1,1,27   MA'S BY WHEN DISCOVERED                  09021400
   5   TABLE     P3,0,1,45    MA'S BY SYSTEM                           09021500
   6   TABLE     P17,1,1,27   MA'S BY SYSTEM & WHEN DISCOVERED         09021600
   7   TABLE     PN86,0,1,300                                          09021700
   8   TABLE     V56,20,20,125  ORGANIZATIONAL MTTR                    09021800
   9   TABLE     V60,20,20,250  DOWNTIME DISTRIBUTION                  09021900
  10   TABLE     PN86,0,1,300   MTBR EVENTS                           09022000
  11   TABLE     PN85,0,1,300   CANNIBALIZED PARTS                    09022100
  12   TABLE     PN86,0,1,300   PARTS GAINING OR REPR DURING OR CANNIBALIZATION  09022200
  13   TABLE     PN85,0,1,300   PARTS R AND S BY SERVICE PLATOON       09022300
  14   TABLE     V56,1,25,125      MTTR FOR OFF AIRCRAFT PART REPAIR   09022400
  15   TABLE     PN85,0,1,300                                          09022500
       STORAGE   953-953,800                                           09022600
                                                                       09022700
                                                                       09022800
   1   FUNCTION  P3,34        TIME RECONFIGURATION START               09022900
   0   1    1    2    2    3    3    4    4    5    5    0              09023000
                                                                       09023100
                                                                       09023200
29─2   FUNCTION  P17,18             GROUND EVENT P(SUCCESS)            09023300
   1   0000032  3030005  0300008  00000111  00000016  5900000         09023400
  17   00000121  000000                                               09023500
                                                                       09023400
                                                                       09023700
   3   FUNCTION  P9,32        PROB OF NO MA DURING FLIGHT              09023800
   0   0500001  000030                                                09023900
                                                                       09024000
                                                                       09024100
   4   FUNCTION  P9,33        MISSION DURATION                         09024200
   0   15    1    15    2    15                                        09024300
                                                                       09024400
                                                                       09024500
   5   FUNCTION  P9,32        PROB NO ABORT/MA DURING FLIGHT           09024600
   0   5500001  550000                                                09024700
                                                                       09024800
                                                                       09024900
   6   FUNCTION  P17,12       LINE MAINTENANCE MANPOWER,MOS,&DURATION  09025000
   2   00010016  200124                                               09025100
                                                                       09025200
                                                                       09025300
   7   FUNCTION  P17,19       MAINTENANCE PRIORITY                     09025400
   1   1    2    5    3    29    11    11    12    5    16    15       09025500
  17   30    22    20    23    23                                     09025600
                                                                       09025700
                                                                       09025800
   9   FUNCTION  P17,12       TIME LIMIT GROUND EVENTS                 09025900
   1   6    5    000000                                               09026000
                                                                       09026100
```

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29   Function 9. This sorting function has been modified by
the addition of the event number 8 and its subsequent func-
tional value of FN56. The inclusion of this change to the
function table enables the model to detect multiple mainte-
nance actions at the intermediate inspection through function
table 56.

29   Function table 15. This is a sorting function that has
been modified by the addition of element number 8 and its func-
tion value FN57. Function 57 is the table defined which pro-
vides the pr.bability of maintenance by various systems, given
a maintenance action at the intermediate inspection.

```
 ●
28 -0      FUNCTION  P10,29              WHEN DISCOVERED SORT MULTI-FAILURES  00026200
 2      FN11  5     FN13  6      FN10  7     FN10  8     FN50  12     FN11  00026300
16      FN12  17    FN14  21     FN51                                       00026400
 ●                                                                          00026500
 ●                                                                          00026600
 ●                                                                          00026700
10      FUNCTION  RN1,34          PROB MULT MA/MA DURING FLIGHT              00026800
0.99001       0.99002      0.99003      0.99004                             00026900
 ●                                                                          00027000
11      FUNCTION  RN1,33          PROB MULT MA/MA DURING PREFLIGHT           00027100
0.99031       0.99072      0.99003                                          00027200
 ●                                                                          00027300
 ●                                                                          00027400
12      FUNCTION  RN1,36          P(MULT MA/MA D DATLY)                      00027500
0.10002       0.30003      0.50004      0.70005      0.90006      0.99007    00027600
 ●                                                                          00027700
 ●                                                                          00027800
13      FUNCTION  RN1,32          PROB MULT MA/MA DURING AIRCREW             00027900
0.99001       0.79002                                                       00028000
 ●                                                                          00028100
 ●                                                                          00028200
 ●                                                                          00028300
14      FUNCTION  RN1,35          P(MULT MA/MA)MA                            00028400
0.100087      0.250057     0.500067     0.700077     0.999957              00028500
 ●                                                                          00028600
 ●                                                                          00028700
29 -15     FUNCTION  P13,28              WHEN DISCOVERED SORT SYSTEM FAILURE 00028800
 2      FN16  5     FN15  6      FN17  7     FN19  8     FN57  12     FN19  00028900
16      FN20  17    FN21                                                    00029000
 ●                                                                          00029100
 ●                                                                          00029200
16      FUNCTION  RN1,311         PROB SYSTEM MA AIRCREW/MA AIRCREW          00029300
0.244101      0.265602     0.362505     0.401003     0.439005     0.455106  00029400
0.566107      0.595305     0.703103     0.752113     0.999911              00029500
17      FUNCTION  RN1,311         PROB SYSTEM MA IN-FLIGHT/MA IN-FLIGHT      00029600
0.244101      0.265602     0.362503     0.401003     0.439005     0.455106  00029700
0.566107      0.595305     0.703103     0.752113     0.999911              00029800
18      FUNCTION  RN1,327         PROB SYSTEM MA ABORT IN-FLIGHT/ABT IN-FLT  00029900
0.014301      0.021301     0.049705     0.056903     0.071003     0.170303  00030000
0.199704      0.205504     0.220005     0.227107     0.234207     0.241307  00030100
0.295507      0.276509     0.354802     0.393207     0.397400     0.411609  00030200
0.418710      0.400010     0.730411     0.766311     0.851311     0.858411  00030300
0.943511      0.986111     0.999911                                        00030400
19      FUNCTION  RN1,311         PROB SYSTEM MA PREFLIGHT/MA PREFLIGHT      00030500
0.244101      0.265602     0.362503     0.401003     0.439005     0.455106  00030600
0.566107      0.595305     0.703103     0.752113     0.999911              00030700
20      FUNCTION  RN1,311         PROB SYSTEM MA DATLY/MA DATLY              00030800
0.244301      0.303602     0.393003     0.429503     0.500105     0.500806  00030900
0.607407      0.654208     0.750203     0.884010     0.999911              00031000
21      FUNCTION  RN1,311         PROB SYSTEM MA PERIODIC/MA PERIODIC        00031100
0.333001      0.363002     0.429503     0.444303     0.473005     0.510906  00031200
```

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29 Function table 23. Again, this is a sorting function that has been modified by the addition of element number 8 and its function value FN 29. Function 29 provides the probability of any element of a system being detected as a failed item in a system, given a maintenance action in this system. Due to the paucity of data on the CH-47C and HLH at the elemental level, this function table is the same as the function table employed at the periodic inspection. If data on another air- craft was of such a quantity that a distinction could be drawn between the elemental probability of occurrence between the intermediate inspection and periodic inspection, it would be suggested that function table 23 be modified to use a function value of FN58 for element number 8 and a new function table 58 be defined of a form similar to that of function table 29. This would give the elemental probability of occurrence at the intermediate inspection, given a system maintenance action at the intermediate inspection.

```
 0.360007    0.570009    0.620309    0.703519    0.999911              00031300
   22     FUNCTION   P3,L11      NUMBER OF ELEMENTS IN SYSTEMS          00031400
   01   26   02   19   03   62   04   25   05   19   06   12           00031500
   07   27   09   04   09   42   10   23   11   34                     00031600
                                                                       00031700
                                                                       00031800
   29-23   FUNCTION   P13,P4         WHEN DISCOVERED SORT ELEMENT FAILUR 00031900
    2   FN27   5   FN24   6   FN25   7   FN26   8   FN29   12   FN27    00032000
   16   FN29  17   FN29                                                00032100
                                                                       00032200
                                                                       00032300
   24     FUNCTION   FN6A,L203    PROB ELEMENT NO AIRCREW/NO SYS AIRCREW 00032400
 0101  010   0101  035   0102  034   0102  051   0103  162   0103  046  00032500
 0104  013   0104  004   0105  032   0105  051   0106  001   0106  005  00032600
 0107  014   0107  002   0108  175   0108  172   0109  012   0109  001  00032700
 0110  004   0110  002   0111  014   0111  010   0112  050   0112  023  00032800
 0115  330   0113  007   0201  034   0202  012   0202  042   0203  021  00032900
 0203  037   0204  074   0204  058   0205  021   0205  029   0206  012  00033000
 0206  004   0207  001   0208  034   0208  012   0209  012   0209  091  00033100
 0210  009   0211  345   0211  132   0301  013   0301  056   0302  603  00033200
 0302  440   0302  003   0303  013   0303  025   0303  001   0304  011  00033300
 0304  032   0305  207   0306  031   0307  001   0308  001   0308  001  00033400
 0309  003   0310  002   0311  003   0312  002   0313  003   0314  001  00033500
 0315  001   0315  001   0317  003   0318  001   0319  003   0320  002  00033600
 0321  005   0322  001   0323  031   0324  001   0325  001   0326  003  00033700
 0327  013   0328  002   0329  025   0330  003   0331  012   0332  003  00033800
 0333  003   0334  005   0335  005   0336  050   0337  011   0337  001  00033900
 0338  030   0339  022   0339  002   0340  002   0341  001   0342  000  00034000
 0343  000   0344  000   0345  020   0345  050   0346  000   0347  002  00034100
 0348  000   0349  000   0350  030   0351  023   0351  003   0401  025  00034200
 0401  044   0402  005   0402  039   0403  012   0403  044   0404  007  00034300
 0405  007   0405  016   0405  032   0406  069   0406  018   0407  021  00034400
 0407  062   0408  307   0408  030   0409  032   0409  014   0410  002  00034500
 0410  030   0411  002   0412  232   0412  057   0413  208   0413  005  00034600
 0501  012   0501  026   0501  005   0502  027   0502  016   0503  046  00034700
 0503  029   0504  360   0504  049   0505  023   0505  095   0506  023  00034800
 0506  019   0507  035   0507  028   0508  052   0508  023   0509  467  00034900
 0509  016   0601  060   0601  017   0602  006   0603  011   0603  006  00035000
 0604  044   0604  077   0605  011   0605  099   0606  027   0606  093  00035100
 0607  500   0701  001   0702  031   0702  057   0703  001   0703  008  00035200
 0704  015   0704  053   0705  031   0706  017   0707  005   0707  013  00035300
 0708  035   0709  015   0709  031   0709  012   0710  001   0710  003  00035400
 0710  021   0711  779   0711  003   0712  001   0712  002   0713  018  00035500
 0713  001   0714  001   0715  015   0715  001   0801  049   0801  374  00035600
 0802  374   0802  003   0901  005   0901  055   0901  002   0902  005  00035700
 0902  037   0902  001   0903  037   0903  070   0904  008   0904  035  00035800
 0904  004   0905  007   0905  026   0906  396   0906  008   0907  006  00035900
 0907  029   0907  011   0909  002   0908  052   0909  011   0909  012  00036000
 0909  015   0910  143   0910  014   0911  009   0911  002   0912  092  00036100
 0912  037   0913  002   0914  002   0915  004   0916  004   0917  001  00036200
 0919  004   0918  008   0919  034   0920  001   0921  001   0921  001  00036300
```

```
0822  115  1225  102  1002  020  1002  025  1003  011  1003  031  00036000
1230  117  1234  043  1205  011  1005  114  1005  002  1004  002  00036500
1237  002  1237  117  1204  019  1004  020  1009  007  1009  049  00036600
1310  011  1312  147  1311  025  1011  015  1011  070  1012  031  00036700
1312  013  1121  011  1101  010  1102  013  1102  016  1102  001  00036600
1135  011  1133  143  1105  010  1104  125  1104  010  1105  012  00036200
1115  009  1134  003  1107  016  1107  015  1108  001  1108  005  00037000
1130  013  1130  015  1110  013  1110  021  1111  001  1111  004  00037100
1112  013  1112  133  1113  012  1113  007  1114  015  1114  001  00037200
1115  001  1115  003  1116  021  1116  001  1117  000           00037300
25    FUNCTION   FN04.L235   2234 ELEMENT 44 IN-FLIGHT/04 SYS IN-FLT 00037400
0101  010  0101  025  0102  014  0102  031  0103  152  0103  046  00037500
0104  013  0103  014  0105  012  0105  011  0104  001  0104  005  00037600
0107  014  0107  002  0104  175  0104  112  0103  012  0104  001  00037700
0110  014  0110  002  0111  014  0111  012  0112  050  0112  023  00037400
0113  135  0113  007  0201  014  0202  012  0202  012  0203  021  00037300
0203  117  0204  074  0204  054  0205  021  0205  034  0204  012  00038000
0206  014  0207  141  0204  032  0204  012  0208  012  0209  031  00038100
0211  034  0211  145  0211  142  0301  013  0301  054  0302  013  00038200
0302  040  0312  003  0303  013  0303  025  0303  001  0304  011  00038300
0304  032  0305  203  0305  031  0307  001  0308  001  0304  051  00038400
0307  013  0310  002  0311  013  0312  012  0313  003  0314  001  00038500
0315  015  0316  001  0317  013  0314  011  0313  003  0320  002  00038600
0321  013  0322  001  0323  001  0324  011  0325  011  0324  003  00038700
0327  013  0324  012  0320  125  0330  013  0331  012  0332  003  00038800
0333  003  0334  005  0335  013  0336  010  0337  011  0337  001  00038200
0334  010  0343  012  0343  002  0340  012  0341  001  0342  000  00038300
0333  013  0344  013  0345  124  0345  000  0346  340  0347  002  00038100
0348  010  0343  000  0350  010  0351  013  0351  043  0401  025  00038200
0401  014  0402  003  0402  010  0403  012  0403  014  0404  007  00038300
0405  037  0405  015  0405  002  0406  043  0406  010  0407  021  00038400
0407  152  0409  007  0409  030  0409  102  0409  014  0410  002  00038500
0410  030  0411  002  0412  212  0412  157  0413  214  0413  005  00038600
0501  012  0501  024  0501  035  0502  037  0502  014  0503  046  00038700
0303  124  0504  001  0504  143  0505  023  0505  025  0504  023  00038400
0334  010  0537  155  0507  024  0509  012  0509  023  0509  467  00038200
0530  013  0601  152  0501  017  0502  115  0603  011  0603  006  00039000
0601  024  0603  077  0605  011  0605  033  0606  037  0606  093  00049100
0637  543  0701  011  0702  011  0702  037  0703  001  0703  038  00049200
0704  015  0704  053  0705  031  0705  017  0707  005  0707  013  00049300
0704  005  0708  015  0703  011  0703  012  0709  001  0710  003  00049400
0710  021  0711  779  0711  013  0712  011  0712  002  0713  018  00049500
0713  011  0713  011  0713  015  0715  011  0801  010  0801  374  00049400
0802  374  0802  015  0801  005  0801  005  0801  002  0802  005  00049700
0312  037  0302  001  0903  037  0903  070  0904  008  0904  035  00049400
0913  114  0905  007  0905  026  0905  136  0905  008  0907  006  00049000
0937  128  0807  011  0304  012  0804  012  0909  011  0909  012  00041000
0313  015  0913  145  0910  014  0911  014  0811  002  0913  092  00041100
0912  017  0913  012  0913  012  0915  014  0916  000  0917  001  00041200
0914  031  0914  004  0913  014  0920  011  0921  001  0921  001  00041300
0822  015  0823  002  1002  020  1002  025  1003  011  1003  031  00041400
```

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1006	007	1007	043	1005	111	1005	154	1006	042	1006	002	00041500
1007	002	1007	007	1009	030	1009	020	1009	047	1009	049	00041600
1010	011	1010	047	1010	035	1011	013	1011	070	1012	431	00041700
1012	005	1101	011	1101	014	1102	003	1102	016	1102	001	00041800
1103	011	1103	005	1103	008	1104	125	1104	040	1105	017	00041900
1105	009	1106	002	1107	014	1107	086	1109	001	1108	005	00042000
1109	003	1109	015	1117	009	1110	021	1111	001	1111	004	00042100
1112	433	1112	030	1113	032	1113	057	1114	015	1114	001	00042200
1115	001	1115	009	1116	021	1116	001	1117	000			00042300

```
25    FUNCTION    PN0B.L293    PRD ELEMENT 04 ABORT IN-FLIGHT/BY ABT FLT00042400
```

0101	010	0101	000	0102	030	0102	030	0103	647	0103	000	00042500
0104	030	0104	000	0105	000	0105	000	0106	333	0106	000	00042600
0107	000	0107	000	0108	000	0108	000	0109	000	0109	000	00042700
0110	000	0110	000	0111	000	0111	000	0112	000	0112	000	00042800
0113	000	0115	000	0201	000	0202	000	0202	000	0203	000	00042900
0203	030	0204	000	0204	030	0205	000	0205	000	0206	000	00043000
0204	000	0207	000	0208	000	0208	000	0209	000	0209	000	00043100
0210	000	0211	000	0211	000	0301	130	0301	000	0302	388	00043200
0302	000	0302	000	0303	035	0303	000	0303	000	0304	667	00043300
0306	000	0305	000	0306	000	0307	000	0308	000	0309	000	00043400
0310	000	0310	000	0311	000	0312	000	0313	000	0314	000	00043500
0315	000	0316	000	0317	000	0319	000	0319	000	0320	000	00043600
0321	000	0322	000	0323	000	0324	000	0325	000	0326	000	00043700
0327	000	0329	000	0329	000	0330	000	0331	000	0332	000	00043800
0333	000	0333	000	0335	000	0336	000	0337	000	0337	000	00043900
0338	000	0339	000	0339	000	0340	000	0341	000	0342	000	00044000
0343	000	0344	000	0345	000	0345	000	0346	000	0347	000	00044100
0348	000	0349	000	0350	000	0351	000	0351	000	0401	000	00044200
0401	000	0402	000	0402	000	0403	000	0403	000	0404	000	00044300
0405	000	0404	000	0405	000	0406	000	0406	000	0407	000	00044400
0407	000	0408	000	0409	000	0409	000	0409	000	0410	000	00044500
0410	000	0411	000	0412	000	0412	000	0413	000	0413	000	00044600
0501	000	0501	000	0501	000	0502	000	0502	000	0503	000	00044700
0503	000	0504	000	0504	000	0505	000	0505	000	0506	000	00044800
0506	000	0507	000	0507	000	0508	000	0509	000	0509	000	00044900
0509	000	0601	000	0601	000	0602	000	0603	000	0603	000	00045000
0604	000	0604	000	0605	000	0605	000	0606	000	0606	000	00045100
0607	000	0701	000	0702	000	0702	000	0703	200	0703	000	00045200
0704	000	0704	000	0705	200	0705	000	0707	200	0707	000	00045300
0708	000	0709	000	0709	000	0709	000	0709	000	0710	800	00045400
0710	000	0711	000	0711	000	0712	000	0712	000	0713	000	00045500
0713	000	0713	000	0715	000	0715	000	0801	800	0801	000	00045600
0802	000	0802	000	0901	579	0901	000	0901	000	0902	211	00045700
0902	000	0902	000	0903	135	0903	000	0904	115	0904	000	00045800
0904	000	0905	000	0905	000	0906	000	0906	000	0907	000	00045900
0907	000	0907	000	0909	000	0909	000	0909	000	0909	000	00046000
0910	000	0910	000	0910	000	0911	000	0911	000	0912	000	00046100
0912	000	0913	000	0914	000	0915	000	0916	000	0917	000	00046200
0919	000	0919	000	0919	000	0920	000	0921	000	0921	000	00046300
0922	000	0923	000	1002	000	1002	000	1003	000	1003	000	00046400
1001	000	1004	000	1005	250	1005	000	1006	000	1006	000	00046500

1037	990	1707	900	1009	030	1009	990	1909	900	1009	090	99046600
1010	750	1910	999	1910	030	1011	990	1911	990	1012	000	99046700
1012	920	1101	900	1101	030	1102	513	1102	990	1102	000	99046800
1103	093	1103	909	1103	990	1104	930	1104	990	1105	000	99046900
1105	900	1106	909	1107	152	1107	930	1109	913	1109	000	99047000
1109	152	1109	909	1110	976	1110	999	1111	925	1111	000	99047100
1112	900	1112	999	1113	030	1113	930	1114	990	1114	000	99047200
1115	930	1115	930	1116	930	1116	990	1117	090			99047300
27		FUNCTION		ENBR,L203		???3 ELEMENT 41		PREFLIGHT/MA		SVS PREFLIGHT		99047400
0101	919	0101	005	9102	934	0102	911	9103	142	0103	046	99047500
0104	913	0104	904	0105	992	0105	991	0106	091	0106	005	99047600
0107	913	0107	093	0109	175	0108	112	0109	012	0109	001	99047700
0110	904	9110	902	0111	914	0111	919	0112	950	0112	023	99047800
0113	330	9113	907	9201	934	0202	912	0202	042	0203	021	99047900
0203	937	0204	974	0204	950	0205	921	0205	029	0204	012	99048000
0206	934	9207	941	9209	934	0208	912	0209	017	0209	091	99048100
0210	934	9211	345	9211	112	0301	913	0301	056	0302	003	99048200
0302	939	0302	903	9303	013	0303	925	0303	991	0304	011	99048300
0304	952	0305	299	9305	991	0307	991	0309	991	0308	091	99048400
0309	003	9310	902	9311	003	0312	992	0313	003	0314	001	99048500
0315	901	9316	901	9317	003	0319	991	0319	003	0320	002	99048600
0921	975	9322	901	9323	901	0324	991	0325	991	0326	003	99048700
0327	913	9329	902	9329	025	0330	993	0331	012	0332	003	99048800
0333	993	9334	005	9335	993	0336	990	0337	011	0337	001	99048900
0339	930	9339	922	9333	932	0340	992	0341	991	0342	000	99039000
0343	930	9344	999	9345	920	0345	933	0346	990	0347	002	99039100
0349	030	9343	993	9350	030	0351	023	0351	993	0401	025	99047200
0401	988	9402	995	9402	939	0403	012	0403	944	0404	007	99048300
0405	007	9405	914	9405	932	0406	943	0406	018	0407	021	99048400
0937	952	9409	917	9409	930	0409	992	0409	014	0410	002	99048500
0310	930	0211	902	9412	202	0412	057	0413	208	0413	005	99046600
0501	912	9591	025	9501	035	0502	027	0502	016	0503	046	99046700
0503	029	9504	950	9504	949	0505	923	0505	035	0506	023	99048900
0506	913	9507	935	9507	928	0509	012	0508	023	0509	467	99049000
0510	914	9511	950	9601	017	0602	935	0603	011	0603	006	99050000
0503	934	9594	977	9503	011	0605	933	0606	027	0606	093	99050100
0607	549	9701	931	9702	991	0702	057	0703	001	0703	008	99050200
0704	915	9704	053	9705	011	0705	017	0707	005	0707	013	99050300
0709	995	9709	913	9709	931	0709	012	0709	991	0710	003	99050400
0710	921	9711	779	9711	033	0712	991	0712	992	0713	018	99050500
0713	901	9714	901	9715	915	0715	931	0801	049	0801	374	99050600
0093	574	9902	993	0901	995	0901	935	0901	092	0902	005	99050700
0902	937	0902	901	9903	907	0903	970	0904	008	0904	035	99050800
0904	904	9905	907	0905	026	0906	336	0906	004	0907	006	99050900
0907	029	9907	911	9909	032	0909	992	0909	011	0909	012	99051000
0909	915	9910	143	9910	914	0911	908	0911	092	0912	097	99051100
0912	907	0913	992	9914	002	0915	994	0916	094	0917	001	99051200
0914	904	0915	904	9919	034	0920	931	0921	091	0921	001	99051300
0922	935	0923	902	1002	029	1002	925	1003	011	1003	031	99051400
1004	907	1004	043	1005	011	1005	134	1006	092	1006	002	99051500
1007	932	1007	907	1009	030	1009	930	1009	097	1009	069	99051600

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1012  035   1101  011   1101  014   1102  003   1102  016   1102  001   00056400
1103  011   1103  045   1103  008   1104  125   1104  090   1105  012   00056900
1105  039   1106  002   1107  016   1107  026   1108  001   1109  005   00057000
1109  003   1109  015   1110  030   1110  031   1111  041   1111  004   00057100
1112  033   1112  030   1113  032   1113  007   1114  015   1114  001   00057200
1115  001   1115  003   1115  021   1116  001   1117  000               00057300
 >>   FUNCTION   FREQ,L293    PROB  ELEMENT  NA  PERIODIC/NA  SVS PERIODIC  00057400
0101  010   0101  003   0102  034   0102  001   0103  162   0103  046   00057500
0104  013   0104  003   0105  002   0105  001   0106  001   0106  005   00057600
0107  014   0107  002   0109  175   0108  112   0109  012   0109  001   00057700
0110  034   0110  002   0111  014   0111  010   0112  050   0112  023   00057800
0113  330   0113  007   0201  034   0202  012   0202  042   0203  021   00057900
0203  037   0204  078   0204  058   0205  031   0205  039   0206  012   00058000
0206  008   0207  041   0208  034   0208  012   0209  012   0209  091   00058100
0210  009   0211  346   0211  132   0301  013   0301  056   0302  003   00058200
0302  430   0302  013   0303  013   0303  025   0303  001   0304  011   00058300
0304  032   0305  203   0305  001   0307  001   0308  001   0309  001   00058400
0309  003   0310  002   0311  003   0312  002   0313  003   0314  001   00058500
0315  001   0316  001   0317  003   0318  001   0319  003   0320  002   00058600
0321  005   0322  001   0323  001   0324  001   0325  001   0326  003   00058700
0327  013   0329  002   0329  025   0330  003   0331  012   0332  003   00058800
0333  003   0334  005   0335  003   0336  000   0337  011   0337  001   00058900
0338  000   0339  022   0339  032   0340  002   0341  001   0342  000   00059000
0343  020   0344  001   0345  020   0345  001   0346  000   0347  002   00059100
0349  000   0349  000   0350  000   0351  023   0351  001   0401  025   00059200
0401  034   0402  005   0402  039   0403  012   0403  044   0404  007   00059300
0405  007   0405  015   0405  032   0406  043   0406  018   0407  021   00059400
0407  052   0409  007   0409  030   0409  032   0409  014   0410  002   00059500
0410  030   0411  002   0412  202   0412  057   0413  248   0413  005   00059600
0431  012   0431  025   0501  075   0502  037   0502  016   0503  046   00059700
0503  029   0504  150   0504  039   0505  023   0505  005   0506  023   00059800
0506  019   0507  035   0507  028   0509  012   0508  023   0509  467   00059900
0509  016   0601  069   0601  017   0602  006   0603  011   0603  006   00060000
0604  044   0604  077   0605  011   0605  039   0604  027   0606  093   00060100
0637  549   0701  001   0702  001   0702  007   0703  001   0703  008   00060200
0704  015   0704  053   0705  001   0705  017   0707  005   0707  013   00060300
0709  005   0709  015   0709  001   0709  012   0709  001   0710  003   00060400
0710  021   0711  779   0711  033   0712  001   0712  002   0713  018   00060500
0713  001   0714  001   0715  015   0715  001   0801  049   0801  374   00060600
0902  574   0902  005   0901  005   0901  001   0901  002   0902  005   00060700
0902  037   0902  001   0903  007   0903  070   0904  018   0904  035   00060800
0904  004   0905  007   0905  026   0906  336   0906  004   0907  000   00060900
0907  028   0907  011   0909  002   0908  002   0909  011   0909  012   00061000
0909  015   0910  143   0910  014   0911  005   0911  002   0912  092   00061100
0912  007   0913  002   0914  032   0915  004   0916  004   0917  001   00061200
0918  034   0919  004   0919  034   0920  001   0921  001   0921  001   00061300
0922  005   0923  002   1002  029   1002  025   1003  011   1003  031   00061400
1004  007   1004  043   1005  011   1005  134   1006  002   1006  002   00061500
1007  002   1007  007   1008  030   1008  320   1008  047   1009  049   00061600
1010  011   1010  067   1010  035   1011  013   1011  079   1012  431   00061700
1012  035   1101  011   1101  014   1102  003   1102  016   1102  001   00061800
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1133  011   1103  045   1105  00A   1104  125   1104  090   1105  012   00041000
1135  039   1106  002   1107  016   1107  006   1109  001   1108  005   00042000
1139  003   1109  015   1119  039   1110  001   1111  001   1111  004   00062100
1112  033   1112  030   1113  032   1113  007   1114  015   1114  001   00062200
1115  001   1115  009   1116  021   1116  001   1117  000                00062300
 33   FUNCTION    FN86,L293    PROS AIRCRA  '4) AJORT/MA  DURING AIRCRE-  00062400
0101  000   0101  000   0102  030   0102  000   0103  667   0103  000   00062500
0104  000   0104  000   0105  030   0105  000   0106  333   0106  000   00062600
0107  000   0107  000   0109  030   0109  000   0109  000   0109  000   00062700
0110  000   0110  000   0111  030   0111  000   0112  000   0112  000   00062800
0113  000   0113  000   0201  030   0202  000   0202  000   0203  000   00062900
0203  000   0204  000   0204  000   0205  000   0205  000   0206  000   00063000
0206  000   0207  000   0209  030   0208  000   0209  000   0209  000   00063100
0210  000   0211  000   0211  030   0301  100   0301  000   0302  048   00063200
0302  000   0302  000   0303  075   0303  000   0303  000   0304  667   00063300
0304  000   0305  000   0306  030   0307  000   0308  000   0308  000   00063400
0309  000   0310  000   0311  030   0312  000   0313  000   0314  000   00063500
0315  000   0316  000   0317  030   0318  000   0319  000   0320  000   00063600
0321  000   0322  000   0323  030   0324  000   0325  000   0326  000   00063700
0327  000   0329  000   0329  000   0330  030   0331  000   0332  000   00063800
0333  000   0334  000   0335  030   0336  000   0337  000   0337  000   00063900
0338  000   0339  000   0339  030   0340  000   0341  000   0342  000   00064000
0343  000   0344  000   0345  030   0345  000   0346  000   0347  000   00064100
0348  000   0349  000   0350  030   0351  000   0351  000   0401  000   00064200
0401  000   0402  020   0402  000   0403  000   0403  000   0404  000   00064300
0405  000   0405  000   0405  000   0404  000   0406  000   0407  000   00064400
0407  000   0409  000   0408  030   0409  000   0409  000   0410  000   00064500
0410  000   0411  000   0412  250   0412  000   0413  000   0413  000   00064600
0501  000   0501  000   0501  030   0502  000   0502  000   0503  000   00064700
0503  000   0504  000   0504  030   0505  000   0505  000   0506  000   00064800
0506  000   0507  000   0507  030   0508  000   0508  000   0509  000   00064900
0509  000   0601  000   0601  030   0602  000   0603  000   0603  000   00065000
0604  000   0604  000   0605  030   0605  000   0606  000   0606  000   00065100
0607  000   0701  000   0702  030   0702  000   0703  200   0703  000   00065200
0704  000   0704  000   0705  250   0705  000   0707  200   0707  000   00065300
0708  000   0708  000   0709  030   0709  000   0709  000   0710  400   00065400
0710  000   0711  000   0711  000   0712  000   0712  000   0713  000   00065500
0713  000   0714  000   0715  030   0715  000   0801  000   0801  000   00065600
0902  000   0902  000   0901  570   0901  000   0901  000   0902  211   00065700
0902  000   0902  000   0903  135   0903  000   0904  115   0904  000   00065800
0904  000   0905  000   0905  030   0906  000   0906  000   0907  000   00065900
0907  000   0907  000   0908  030   0908  000   0909  000   0909  000   00066000
0909  000   0910  000   0910  030   0911  000   0911  000   0912  000   00066100
0912  000   0913  000   0914  030   0915  000   0916  000   0917  000   00066200
0919  000   0919  000   0919  030   0920  000   0921  000   0921  000   00066300
0922  000   0923  000   1002  030   1002  000   1003  000   1003  000   00066400
1004  000   1004  000   1005  250   1005  000   1006  000   1006  000   00066500
1007  000   1007  000   1009  000   1008  000   1009  000   1009  000   00066600
1010  750   1010  000   1010  000   1011  000   1011  000   1012  000   00066700
1012  000   1101  000   1101  030   1102  510   1102  000   1102  000   00066800
1103  003   1103  000   1103  030   1104  000   1104  000   1105  000   00066900
```

?0 Function tables 32, 33, 34, 35 and 37. For each of these functions, the function table definition card for HLH and CH-47 models P22 has been replaced by FN46. That is, whenever these function tables are addressed, function 46 will be used to indicate which element of the function table is to be selected. As previously defined, parameter 22 was used to identify the element that was to be selected. Also on the function definition card, these function tables have been modified from discrete function tables with a D identifier to list-type functions with an L identifier for the number of discrete points in the function table. Due to the occurrence in the CH-47C model of multiple maintenance actions on the same element number, it was necessary to modify these tables to list-type functions. Discrete function tables do not provide the analyst with the ability to keep the same functional X value for the table for various points within the function tables. That is, for discrete function tables, the X value must be monotonic increasing. It was desirable to provide the analyst with a method of keeping all the various elemental values of these function tables compatible with the work breakdown structure or element identification number system employed. These tables have been modified to list-type tables. It should be noted here, however, that in the situation where list function tables are employed, the X value of the function table is not even analyzed by the computer. Rather, it merely assumes that the Y values of the function table are related to numbers running from 1 to the total number of discrete data points for the function table as defined on the function table specification card. Function table 46, which defines the element number in terms of a number running from 1 to the discrete number of data points in the model as a function of the inputted element numbers, is significant to the proper actuation of the model. These element numbers are dummies when a model has more than one task per element number. They have been biased to conform to requirements of a discrete function table that the element numbers be monotonic increasing. However, it is felt that this bias, which is merely a manipulative problem and has nothing to do with the proper functioning of the model, in no way distorts the results of the model and, furthermore, allows the analyst to properly code his element numbers with respect to all the R&M data for all other function tables of the model.

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1135   000   1106   000   1107   152   1107   000   1109   013   1109   000   00047000
1106   152   1109   000   1110   076   1110   000   1111   025   1111   000   00047100
1112   000   1112   000   1113   000   1113   000   1114   000   1114   000   00047200
1115   000   1115   000   1116   000   1116   000   1117   000                  00047300
  .                                                                             00047400
  .                                                                             00047500
 31      FUNCTION   P19,24                                                      00047600
  2      FN30   5       FN33   6       FN32   16      FN35                      00047700
                                                                                00047800
  4                                                                             00047900
 32      FUNCTION   FN35,L293                                                   00048000
0131   0000260131   0000030102   0303260102   0300000103   0000260103   00000003065100
0134   0000260103   0000030105   0303260105   0300000106   0422350106   00000003069200
0137   0000260107   0000030109   0303260109   0300000109   0000260109   00000003069300
0140   0000260113   0000030111   0303260111   0300000112   0000260112   00000003069400
1113   0000260113   0000030201   0303260202   0300260202   0000000203   00002600069400
0203   0000030203   0000030204   0303000205   0300260205   0000000206   00002600069400
0206   0000000207   0000030209   0303260209   0300000209   0000260209   00000003069700
0210   0300260211   0000030211   0303000030   0422350301   0000000302   00002600069900
0332   0000000302   0000030303   0303260303   0300000303   0000000304   00002600069900
0314   0000030305   0303260306   0303260307   0300260309   0000260309   00000003069000
0330   0000260313   0000260311   0303260312   0300260313   0000260314   00002600069100
0315   0000260316   0000260317   0303260318   0300260319   0000260320   00002600069200
0321   0000260322   0000030323   0303260324   0300260325   0000260326   00002600069300
0327   0000260329   0000030329   0303260330   0300260331   0000260332   00002600069400
0333   0000260334   0000260335   0303260336   0300260337   0000260337   00000003069500
0339   0000260339   0000030333   0303000340   0300260341   0000260342   00002600069600
0333   0000260344   0303260345   0303260345   0300000346   0000260347   00002600069700
0348   0000260349   0000030350   0303260351   0300260351   0000000401   00002600069900
0431   0000000402   0000260402   0303000401   0300260403   0000000404   00002600069900
0435   0734270435   0000030405   0303000406   0300000406   0000000407   00002600070000
0437   0000030409   0303260409   0303000403   0300260409   0000000410   00002600070100
0410   0000000411   0000260412   0303260412   0300000413   0000260413   00000003073200
0501   0000260531   0000030501   0303000502   0300260502   0000000503   00002600070300
0503   0000030504   0000260504   0303000505   0300260505   0000000506   00002600070400
0504   0000000507   0000260507   0303000508   0300260509   0000000509   00002600070500
0510   0000030601   0000260601   0303000602   0300260603   0000260603   00000003070600
0634   0000260604   0303000605   0303260605   0300000606   0000260606   00000003070700
0637   0000260701   0000030702   0303260702   0300000703   0000260703   00000003070900
0734   0000260704   0000030705   0303260705   0300000707   0000260707   00000003070900
0759   0000260709   0000030709   0303260709   0300000709   0000000710   00002600071000
0710   0000030711   0000260711   0303000712   0300260712   0000000713   00002600071100
0713   0000030714   0000260715   0303260715   0300000801   0000260901   00000003071200
0432   0000260802   0000030901   0303260801   0300000901   0000000902   06223500071300
0733   0000030902   0000030903   0303000903   0300000904   0422350904   00000003071400
0904   0000000905   0000260906   0303000906   0300260906   0000000907   00002600071500
0937   0000030907   0000030909   0303260909   0300000909   0000260909   00000003071600
0939   0000030910   0000260910   0303000911   0300260911   0000000912   00002600071700
0912   0000030913   0000260914   0303260915   0300260916   0000260917   00002600071900
0914   0000260919   0000030919   0303260920   0300260921   0000260921   00000003071900
0932   0000260923   0000260002   0303261002   0300001003   0422351003   00000003072000
```

30 Function table 33 has been modified to a list-type function table.

1108 0000261004 0000001005 0300261005 0000001006 0000261006 000000007072100
1007 0000261007 0000001009 0000261008 0000001009 0000261009 000000007072200
1010 0022351010 0000001010 0300001011 0000251011 0000001012 000026007072300
1012 0000001101 0000251101 0000001102 1244751102 0000001102 000000007072400
1113 1244751103 0000001103 0300001104 0000251104 0000001105 000026007072500
1115 0000001106 0000261107 0000261107 0000001108 0000261108 030000007072400
1108 0000261109 0000001110 0000261110 0000001111 0000261111 000000007072700
1112 0000261112 0000001113 0300261113 0000001114 0000261114 030000007072400
1115 0000261115 0000001116 0300251116 0000001117 000024   00072400
99   FUNCTION   FN46,L203   00073000
0101 0000260101 0000001102 0300260102 0000000103 0000260103 000000007073100
0104 0000260104 0000001105 0300260105 0000001106 0022350104 000000007073200
0107 0000260107 0000001109 0300260108 0000001103 0000260109 030000007073300
0110 0000260110 0000001111 0300260111 0000000112 0000260112 000000007073400
0113 0000260113 0000001201 0300260202 0000250203 0000000203 030026007073500
0203 0000001204 0000250204 0300001205 0000250205 0000000206 000026007073407
0206 0000001207 0000260208 0300250208 0000001209 0000260209 000000007073700
0210 0000260211 0000001211 0300001301 0022350301 0000001302 000026007073900
0302 0000001302 0000001303 0300260303 0000001303 0000001304 030026007073903
0304 0000001305 0000260306 0300260307 0000250308 0000260308 000000007074000
0309 0000260310 0000001311 0300260312 0000250313 0000260314 000026007074100
0315 0000260316 0000260317 0300260318 0000250319 0000260320 000026007074200
0321 0000260322 0000260323 0300260324 0000260325 0000260326 000026007074300
0327 0000260328 0000260329 0300260330 0000260331 0000260332 000026007074400
0333 0000260334 0000260335 0300260336 0000260337 0000260337 000000007074500
0339 0000260339 0000260339 0300260340 0000260341 0000260342 000026007074600
0343 0000260344 0000260345 0300260345 0000000346 0000260347 000026007074700
0349 0000260349 0000260350 0300260351 0000260351 0000000401 000026007074900
0401 0000000402 0000260402 0300000403 0000260403 0000000404 000026007074900
0405 3730270405 0000000405 0000000406 0000260406 0000000407 000026007075000
0407 0000000409 0000250409 0300000409 0000260409 0000000410 000026007075100
0411 0000000411 0000260412 0300260412 0000000413 0000260413 000000007075200
0501 0000260501 0000000501 0300000502 0000260502 0000000503 000026007075300
0503 0000000504 0000260504 0300000505 0000260505 0000000506 000026007075400
0506 0000000507 0000260507 0300000509 0000260508 0000000509 000026007075500
0509 0000000511 0000260601 0300000602 0000260603 0000260603 000000007075600
0504 0000250504 0000000605 0300000605 0000000606 0000260606 030000007075700
0607 0000260701 0000260702 0300260702 0000000703 0000260703 000020007075900
0704 0000260704 0000000705 0300260705 0000000707 0000260707 000000007075900
0709 0000260709 0000000709 0300260709 0000000709 0000000710 000026007076000
0710 0000000711 0000260711 0300000712 0000260712 0000000713 000026007076100
0713 0000000714 2417052007 0000000715 0000000901 0000260801 000000007076200
0902 0000260902 0000000901 0300250901 0000000901 0000000902 062235007076300
0903 0000000902 0000000903 0300260903 0000000904 0022350904 030000007076400
0904 0000000915 0000260905 0300000906 0000260906 0000000907 030026007076500
0907 0000000907 0000000909 0300260909 0000000909 0000260909 030000007076600
0909 0000000911 0000260910 0300000911 0000260911 0000000912 030026007076700
0912 0000000913 0000260914 0300260915 0000250915 0000260917 030026007076900
0914 0000260919 0000000919 0300260920 0000260921 0000260921 000000007076900
0922 0000260923 0000261002 0300261002 0000001003 0022351003 000000007077000
1004 0000261004 0000001005 0000261005 0000001006 0000261006 000000007077100

30 Function table 34 has been modified to a list-type function table.

30   Function table 35 has been modified to a list-type
function table.

1310 0622351010 1011001010 1101001011 1001251011 3000001012 0100260100042100
1312 3300001101 3000251101 1102001102 1224751102 3000001102 0100000002042000
1133 1244751103 3000001103 0331001104 0101251104 0100001105 0000260000042500
1135 3300001105 0100261107 0101251107 1101001109 3000261104 0000001000042400
1130 0300261103 3300001110 0301251110 1001001111 1000241111 0000000002042700
1112 0100261112 3000001113 0101261113 1001001114 1000241114 0000000002042400
1115 0100261115 3001001116 0101251116 0110001117 010002A   0100201000
0101 0300250101 0000010102 1101260102 0100010103 0100260103 0000000002043100
0104 0000250104 0300100103 0301250105 0300000105 0422350106 0000000002043200
0107 0000260107 0300100109 0301260100 0101000109 0100240109 0000000002043300
0110 0000250110 0300100111 0301260111 0100000112 0100240112 0000000002043400
0113 0000250113 0311000201 0301260202 0100250202 0100000203 0100260000043500
0201 0300000204 0300250204 0301000205 0100250205 0100000206 0000260000043600
0204 0000010207 0300250209 0301260200 0100010209 0100240209 0000000002043700
0210 0000250211 0100260211 0101000030 0622350301 0100000302 0000260000043900
0302 3300000302 3300100303 0301250303 3300000303 0100000304 0000260000039A0
0304 0000010305 0300260306 0301260307 0300250309 0100260309 0100000002044000
0309 0000250310 3000250311 0301250312 0100250313 0100260314 0300260000044100
0315 0000250316 3000250317 0301260319 0100250319 0100260320 0000260000044200
0321 0000250322 3000250323 0301250324 0300250325 0100240326 0000260000044300
0327 3300250329 3000250323 0301250330 0101240331 0100260332 0000260000044400
0333 3000250334 0000250335 0301250336 0100240337 0100260337 0000000002044500
0334 3300250339 3300250333 0301000340 1101250341 0100260342 0000260000044600
0343 3300250343 3300250345 3301250345 3110010346 0100260347 0100260000044700
0344 0000250343 3000250350 0301240351 0110240351 0100000401 0100260000044900
0401 0300010402 3000250302 0101010403 1101250403 0100000404 0100260000044A00
0405 3730270405 3000100405 3301230406 0301250406 0100000407 0000260000045A00
0407 1100010404 3000260409 3301000409 0101260409 0100000410 0000260000045100
0410 1101000411 3001250412 0301250412 0100010413 0100240413 0000000002045200
0501 0000250501 3300100501 0301000502 0101260502 1000000503 0100260000045300
0503 0001010503 3000250503 1101000505 0301240505 0100000506 0000260000045400
0504 3300000507 3000250507 1301000509 0301250509 0100000509 0000260000045500
0509 1100000601 3000250601 1101000602 1100250603 0100260603 0000000002045600
0634 1100250606 3000100605 1101250605 0110000606 0100260606 0100000002045700
0607 1100250701 3000250702 0301260702 0100000703 0100260703 0000000002045900
0704 3000250704 3000100705 3301250705 0130010707 0100240707 0000000002045900
0704 0300260708 0000100700 0301250700 0301000700 0100000710 0000260000046000
0710 1300010711 3300260711 0101000712 0101260712 1000000713 0000260000046100
0713 0100010714 3000260715 0301250715 0301000801 0100260801 0000300002046200
0902 0000250902 0000100901 0301260901 0300000901 0100000902 0622350000046300
0903 3300000902 3000100903 0301260903 3301010904 0422350904 0000000002046400
0904 1000000905 3000260905 0301000906 1101260906 0100000907 0000260000046500
0907 1000000907 0000100908 0301260900 0100010909 0100240900 0000000002046600
0900 1030000910 0000250910 0301000911 0110250011 0100000912 0000260000046700
0912 0000000913 0000260914 0301260915 0301260916 0100260917 0000260000046900
0914 3300250915 0000100919 0301260920 0110250021 0100240921 0000000002046900
0923 0000250923 1000260002 0101261002 0100010003 0422351003 0000000002047000
1314 0000251004 0000101005 0301261005 1101001006 0100261006 0000000003047100
1007 1000251007 0000101009 0301261008 0101001009 0100261009 0000000002047200
1310 0622351010 3000101010 0301001011 0101261011 0100001012 0000260000047300

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1112   1100001101   1111261101   1100001102   1200751102   1100001102   0100000001007400
1101   1200751103   1101011103   1101001104   1100061104   1100001105   0100260100007500
1115   0100001106   1101261107   1101261107   1111061109   1100261100   0100000100007600
1100   1100261109   1101011110   0101261110   1110061111   1100261111   0000000100007700
1112   1100261112   1100001113   1101261113   1110011113   1100261114   0100000100007800
1115   1100261115   1100001115   1101261116   1100001117   110026     010007800
  55      FUNCTION     NS.024     EXPONENTIAL DISTRIBUTION              01008000
0       0     .1      104   .2     222  .3      355  .4       519   .5      690  01008100
.6     915   .7     1200   .75    1560 .8      1500  .84    1030  .88   2120  01008200
.9     3300   .92    2520  .94    2910 .95     2300  .96    3200  .07   3500  01008300
.94    3500  .33     4500  .395   5500 .990    6200  .990   7500  .9990  8000  01008400
  57      FUNCTION     VALUES.L033            PERCENT RESIDENCE OF OPP/OCID       01008500
0101   1100001101   1111110102   1101000102   1101000103   1100000103   9990000100008400
0110   1100010110   1111110105   1101100105   1111010106   1100000106   9990000100008700
0117   1101010107   1111110100   1101100100   1111010109   1100000109   9990000100008800
0110   1101010110   1111110111   1101001111   0111010112   1100000112   9990000100008900
0115   1100010115   1111110201   1101010202   0111010202   1100000203   0000000100008000
0201   1100000200   1111110201   1101010205   1111010205   1100000206   0000000100009100
0206   0101010207   1111010209   1101010209   1111010209   1100000209   9990000100009200
0210   1101010211   1101010211   1101010301   0111010301   1100000302   0000000100007300
0302   1101010302   1101010303   1101010303   1111010303   1100000304   0000000100009400
0310   1111010305   1100010305   1101010307   1111010300   1100000300   9990000100009500
0313   0101010310   1111010311   1101010312   0111010313   1100000314   0000000100009600
0315   1101010316   1111010317   1101010310   1111010319   1100000320   9990000100009700
0321   1111010322   1111010323   1101010324   0111010325   1100000326   9990000100009800
0327   1111010320   1111010323   1101010330   1111010331   1100000332   9990000100009900
0333   1111010334   1111010335   1101010334   1111010337   1100000337   9990000100000100
0330   1111010333   1100010333   1101010340   1111010341   1100000342   9990000100000100
0331   1111010344   1111010345   0111010345   1111010346   1100000347   9990000100000200
0340   1101010343   1101010350   0101010351   1111010351   1100000401   0000000100000100
0331   1111010402   0111110402   1101010403   0111010403   1100000404   9990000100000400
0335   1111010405   1111010405   1101010406   0101010406   1100000407   0000000100000500
0337   0111010414   1111010405   0101010409   0111010409   1100000410   0100000100000600
0410   1111010411   0100010412   1101010412   1100010413   1100000413   9990000100000700
0501   1100010501   1111010501   1111010502   1100010502   1100000501   0000000100000800
0513   1111010504   0101010504   1101010505   1100010505   1100000506   0000000100000900
0504   1111010507   0100010507   1101010500   1100010500   1100000509   0000000100001000
0510   1111010601   0000010601   1101010602   0111010603   1100000603   9990000100001100
0510   1101010604   1111010605   0101010605   1111010606   1100000606   9990000100001200
0517   1111010701   1111010702   0101010702   1111010703   1100000703   9990000100001300
0714   1111010703   0101010705   1101010705   0111010707   1100000707   9990000100001400
0730   1000010700   0101010703   1101010709   1111010709   1100000710   0100000100001500
0717   1111010711   0101010711   1101010712   1100010712   1100000713   0100000100001600
0713   1111010714   0100010715   1101010715   1111010701   0100000801   9990000100001700
0432   0101010802   1111010801   1101010801   0111010801   1100000802   0000000100001800
0332   1111010802   1111010803   0101010803   0111010804   1100000804   9990000100001900
0314   1111010805   0101010805   0101010806   0101010806   1100000807   0000000100002000
0337   1111010807   1111010809   0101010800   1111010809   1100000809   9990000100002100
0333   0111010810   1111010810   0111010811   1101010811   1100000812   0100000100002200
0312   0110010813   0101010814   1111010815   1111010814   1100000817   0000000100002300
0814   1111010814   1110010813   1101010820   0101010821   1100000821   9990000100002400
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0022    0300000023    0003001002    0303001002    0300001003    0000001003    000000000002900
1004    0300001000    0003001005    0303001005    0300001006    0000001006    000000000002600
1007    0300001007    0003001008    0303001008    0300001009    0000001009    000000000002700
1010    0300001010    0003001010    0303001011    0300001011    0000001012    000099000002800
1012    0300001101    0003001101    0303001102    0300001102    0000001102    000000000002900
1103    0000001103    0003001103    0303001104    0300001104    0000001105    000000000003000
1105    0000001106    0003001107    0303001107    0300001109    0000001108    000000000003100
1109    0000001109    0003001110    0303001110    0300001111    0000001111    000000000003200
1112    0300001112    0003001113    0303001113    0300001114    0000001114    000000000003300
1115    0000001115    0003001116    0303001116    0300001117    000000        000003400
 39      FUNCTION      FNS4,L293                                               000003500
0101    0000000101    0003000102    0303000102    0000000103    0000000103    000000000003600
0104    0000000104    0000000105    0303000105    0000000105    0000020106    000000000003700
0107    0000000107    0003000108    0303000108    0000000109    0000000109    000000000003800
0110    0000000110    0000000111    0303000111    0000000112    0000000112    000000000003900
0113    0000000113    0003000201    0303000202    0000030202    0000000203    000000000004000
0203    0000000204    0000000204    0303000205    0000000205    0000000206    000000000004100
0206    0000000207    0000000208    0303000208    0000000209    0000000209    000000000004200
0210    0000000211    0000000211    0303000301    0000020301    0000000302    000000000004300
0302    0000000302    0000000303    0303000303    0000000303    0000000304    000000000004400
0304    0000000305    0000000306    0303000307    0000000308    0000000308    000000000004500
0309    0000000310    0000000311    0303000312    0000000313    0000000314    000000000004600
0315    0000000316    0000000317    0303000318    0000000319    0000000320    000000000004700
0321    0000000322    0000000323    0303000324    0000000325    0000000326    000000000004800
0327    0000000329    0000000329    0303000330    0000000331    0000000332    000000000004900
0333    0000000334    0000000335    0303000336    0000000337    0000000337    000000000005000
0338    0000000339    0000000339    0303000340    0000000341    0000000342    000000000005100
0343    0000000344    0000000345    0303000345    0000000346    0000000347    000000000005200
0348    0000000349    0000000350    0303000351    0000000351    0000000401    000000000005300
0401    0000000402    0000000402    0303000403    0000000403    0000000404    000000000005400
0405    0003730405    0000000406    0303000406    0000000406    0000000407    000000000005500
0407    0000000408    0000000409    0303000409    0000000409    0000000410    000000000005600
0410    0000000411    0000000412    0303000412    0000000413    0000000413    000000000005700
0501    0000000501    0000000501    0303000502    0000000502    0000000503    000000000005800
0503    0000000504    0000000504    0303000505    0000000505    0000000506    000000000005900
0506    0000000507    0000000507    0303000508    0000000508    0000000509    000000000006000
0509    0000000601    0000000601    0303000602    0000000603    0000000603    000000000006100
0604    0000000604    0000000605    0303000605    0000000606    0000000606    000000000006200
0607    0000000701    0000000702    0303000702    0000000703    0000000703    000000000006300
0709    0000000703    0000000709    0303000709    0000000709    0000000710    000000000006400
0704    0000000704    0000000705    0303000705    0000000707    0000000707    000000000006500
0710    0000000711    0000000711    0303000712    0000000712    0000000713    000000000006600
0713    0000000714    0000000715    0303000715    0000000801    0000000801    000000000006700
0802    0000000802    0000000801    0303000801    0000000801    0000000802    000000000006800
0802    0000000802    0000000803    0303000803    0000000804    0000020804    000000000006900
0804    0000000805    0000000805    0303000806    0000000906    0000000907    000000000007000
0907    0000000807    0000000808    0303000809    0000000909    0000000909    000000000007100
0909    0000000910    0000000910    0303000911    0000000911    0000000912    000000000007200
0912    0000000913    0000000914    0303000915    0000000916    0000000917    000000000007300
0918    0000000915    0000000919    0303000920    0000000921    0000000921    000000000007400
0922    0000000923    0000001002    0303001002    0000001003    0000021003    000000000007500
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1304   0000001004   0000001005   0303001005   0100001006   0000001006   00000010007600
1307   0000001007   0000001008   0308001008   0100001009   0100001009   00000000007700
1310   0000021010   0000001010   0303001011   0100001011   0000001012   00000000007400
1312   0000001101   0000001101   0303001102   0001201102   0000001102   000J0000007900
1105   0001201103   0000001103   0303001104   0000001104   0000001105   00/000000008000
1105   0000001106   0000001107   0303001107   0100001105   0100001108   00000000009100
1109   0300001108   0000001110   0303001110   0300001111   0100001111   00000000008200
1112   0000001112   0000001113   0303001113   0303001114   0100001114   00000000009300
1115   0000001115   0303001116   0303001116   0300001117   000000       00009400
  39     FUNCTION     P1,E5        VARIABLE SORT FOR WORK CENTER             00009500
   1     VS0    2     V39    3     V38                                       00009600
   4                                                                        00009700
   4                                                                        00009800
  39     FUNCTION     FN85,L293    SKILL CODE-WORK CENTER                    00009900
 0131   0300010101   0003020102   0303010102   0103020103   0100010103   00010201009000
 0134   0300010103   0001020105   0303010105   0101020106   0000010106   00000201009100
 0137   0300010107   0001020109   0303010108   0100020109   0100010109   00010201009200
 0110   0303010113   0303020111   0303010111   0103020112   0000010112   00000201009300
 0113   0303010113   0003020201   0303040202   0103030202   0000040203   00000301009400
 0203   0000040203   0303053204   0301040203   0303030205   0100040204   00000301009500
 0204   0301030207   0303040208   0303030208   0300040209   0303030209   00000401009600
 0210   0303030211   0303030211   0301040301   0103010301   0100050302   00000100009700
 0302   0303050302   0303050303   0303010303   0303050303   0100050304   00000100009800
 0304   0300050305   0303010306   0303010307   0100010308   0000010308   00000500009900
 0309   0300010313   0303050311   0303050312   0303010313   0100010314   00000100100000
 0315   0303020316   0303010317   0303010318   0300020319   0100010320   00000500100100
 0321   0303010322   0303050323   0303010324   0303010325   0100010326   00000501100200
 0327   0300010329   0303050329   0303010330   0303030331   0100010332   00000500100300
 0333   0303010334   0303050335   0303010336   0000050335   0000010337   00000500100400
 0338   0303050333   0303010339   0303020340   0303050341   0000010342   00000501100500
 0303   0000050344   0303050345   0303010345   0100050346   0000050347   00000500100600
 0348   0000050343   0303050350   0303050351   0100010351   0000050401   00000101100700
 0401   0300050402   0303010402   0303050403   0303010403   0100050404   00000500100800
 0305   0300010405   0303050405   0303050406   0303010406   0001050407   00000100100900
 0407   0300050408   0303010409   0303050409   0300010409   0303050410   00000100101000
 0410   0300050411   0303010412   0303010413   0301050413   0100010413   00000501101100
 0501   0300010501   0001060501   0301060502   0303010502   0001060503   00000100101200
 0503   0000060504   0303010504   0303060505   0303010505   0001060506   00000100101300
 0506   0300060507   0303010507   0301060508   0303010508   0001060509   00000100101400
 0509   0301060501   0303010601   0303020602   0303010603   0000010603   00000201101500
 0604   0300010504   0303020605   0303010605   0300020606   0100010606   00000201101600
 0607   0303010701   0301060702   0303010702   0301060703   0100010703   00010601101700
 0704   0303010703   0001060703   0303010705   0101060707   0000010707   00010601101800
 0708   0301060709   0001060709   0303010708   0301050709   0101060710   00000100101900
 0710   0301060711   0303010711   0301060712   0303010712   0001060713   00000100102000
 0713   0301060714   0303010715   0303010715   0101060801   0000010801   00010601102100
 0802   0300010802   0001060901   0303010901   0103070901   0100070902   00000100102200
 0902   0303070903   0303070903   0303010903   0303070904   0300010904   00000701102300
 0904   0301070305   0303010905   0303070906   0303010906   0000070907   00000100102400
 0907   0303070907   0303070909   0303010908   0303070909   0300010909   00000701102500
 0909   0300070911   0303010910   0303070911   0103010911   0300070912   00000100102600
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0012  3300070913  0000910918  1300070915  1100070918  0000070917  00000100102700
0014  9300070919  0003070319  0110070920  3300010021  0000070021  00000709102400
0022  0300070023  9300011002  0300011002  0300021003  0000011003  00000200102900
1314  0300011704  0003021003  1300311005  3300021006  0000011006  00000200103000
1327  9000011207  0030021009  3303011008  0001021009  0000011009  00000200103100
1310  0000011310  0003021010  0303021011  9000011311  0000021012  00000100103200
1312  9300021301  9990011101  030C021102  0000011102  0000021102  00000200103300
1133  0300011103  9000021103  030021104  9300011104  0000021105  00000100103400
1135  0000021104  0000021107  0300311107  0100021109  0000011108  00000200103500
1130  0000011130  0030021110  1300711110  0100021111  0000011111  00000200103600
1112  9200011112  0000021113  0300011113  0100021114  0000011114  00000200103700
1115  0000011115  3000021116  0300011116  0300021117  000002      00103900
 01    FUNCTION    01,21      VARIABLE SPEC HANDLER DEFINITION        00103900
 1     V54    2    V55    3    V52                                    00104000
 0                                                                    00104100
 0                                                                    00104200
 02    FUNCTION    FNB6,L223  MPR OFF-EQNT 202,MPR 060 SAMC,MPR 060 10=C00104300
0131  0300010101  0300120102  0300000102  0300100103  0000000103  00112003104400
0134  0900020104  0010070105  0300000105  0014250106  0000000106  00001000104500
0137  0000000107  0010170108  0300000108  0300190109  0000000109  00022000104600
0110  0300000110  0000160111  0300000111  0300100112  0000000112  00001900104700
0113  0300000113  0000150201  0300010202  0100000202  0000140203  00000000104800
0233  0300120204  0300000204  0300200205  0300010205  0000150204  00000000104900
0274  0010190207  0300010209  0300100205  0300150209  0300000209  00001400105000
0219  0000150211  0300000211  0300200301  0300010301  0000140302  00000000105100
0332  0300140302  0300000303  0300010303  0300190303  0300190304  00000000105200
0334  0300170305  0300000305  0300170307  0300000304  0000000304  00001900105300
0310  0300000310  0300010311  0300170312  0300000313  0000000314  00000000105400
0315  0300180315  0003000317  0300000314  0300170310  0000000320  00001900105500
0321  0300000322  0300000323  0300000324  0300000325  0000000326  00001700105600
0327  0300000324  0300170329  0300000330  0300170331  0000000332  00001700105700
0333  0300000334  0300170335  0300010336  0300170337  0000000337  00002000105900
0334  0300170339  0300000340  0300200340  0300170341  0000000342  00001700105900
0343  0300170344  0300170345  0300000345  0300170346  0000170347  00001700106000
0348  0300170343  0300170350  0300170351  0300000351  0000170401  00000000106100
0431  0300130402  0300000402  0300130403  0300000403  0000120404  00001500106200
0235  0300000405  0300150405  0300150406  0300000406  0000200407  00000000106300
0437  0300170409  0300000309  0300140409  0300000409  0000140410  00000000106400
0810  0300130411  0300000412  0300000412  0007200413  0000000413  00002000106500
0531  0300000501  0007000501  0307100502  0300000502  0010100503  00006000106600
0533  0300110504  0300000504  0300130505  0300010505  0004100506  00000000106700
0534  0300130507  0300000507  0307100509  0300000509  0003100509  00000000106800
0510  0310170601  0300000601  0300110602  0300000603  0000010603  00001900106900
0534  0300010603  0300120605  0300000605  0300150604  0000000606  00001500107000
0537  0300010701  0305100702  0300000702  0304100703  0000000703  00051000107100
0734  0300000714  0010000705  0300000705  0004100707  0000000707  00071000107200
0734  0300000719  0007100707  0300000709  0004100709  0004100710  00000000107300
0710  0010050711  0300000711  0311100712  0300000713  0007100713  00000000107400
0713  0010100719  0300000715  0300000715  0301100901  0300000801  00061000107500
0932  0300000902  0010100901  0300000901  0300150901  0300140902  00000000107600
0332  0300150903  0300170903  0300000903  0300150904  0000000904  00001700107700
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0936   1300170905   0993133905   3303190906   1193000006   9100200907   00000003107800
0937   9139161997   0009160909   8303000908   9930160009   0900090909   00001603107900
0930   9303150919   9003933919   0393230911   9903600911   0900290912   00000009109000
0912   9300200913   9003900914   0303100915   9993100916   0900000917   00000009109100
0914   9303200919   9993903913   0303990920   9933990021   9900200921   C00020091092000
0922   9301090923   9993991902   9933901002   9903131003   9900001003   N0001009109300
1996   1199991994   1933141905   9991901005   9903151006   9900091006   00001609109400
1997   9309031997   9993191909   9303931004   9913231009   9900091009   03001309109509
1910   9300991910   9993141010   9303141011   9339991011   9900151012   00000009108600
1912   9393291101   9993991101   0303131102   9933991102   9900151102   00001503109700
1199   1999991193   9999151103   9303151104   9903991104   9900191105   00000009109800
1195   9399541196   9900131107   9933991107   9903151109   9900001109   00001909109900
1199   9933991109   9993131110   9303901110   9903131111   9900001111   00001409109000
1112   9303091112   9333901113   9303001113   9903151114   9900901114   00002009109100
1115   9999091115   9993151116   9303991116   9903201117   099915       09109200
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89     FUNCTION     FNA5,L293         OFF C3 202 EMT, MER EMT                09109300
0191   9009031111   9993120102   9303900102   9903030103   9900000103   00009091109400
0194   9399991193   9993100105   9303900105   9903150106   9900000106   00005109109500
0197   9933093197   9993941109   9303900109   9903040109   9900000109   00001909109600
0910   9933901110   9993901111   9303900111   9903320112   9900000112   00001709109700
0113   9933991115   9993150201   9303950202   9903900202   9900100203   00000003109800
0993   9939060299   9993900204   9903070205   9903900205   9900100206   00000009109900
0996   9900050297   9993970209   9303990208   9903070209   9900000209   N0007091100000
0910   9933990211   9993900211   9303950301   9903990301   9900130302   00000009110100
0932   9933970302   9993430303   9303900303   9903500303   9900050304   00000009110200
0934   9933195305   9993900305   9303900307   9903000308   9900000308   03001403110300
0930   9933991310   9993100311   9303410312   9903050313   9900000314   00000009110400
0315   9933070319   9993990317   9303900314   9903990319   9900000320   00001103110500
0391   9933990122   9993963523   9303900324   9903000325   9900000326   00014609110600
0997   9933030329   9992923323   9303990330   9903950331   9900000332   00005530110700
0933   9903010330   9903991335   9303900336   9903200337   9900000337   00001209110900
0930   9303290339   9993931337   9303110340   9903040341   9900000342   00000609110900
0993   9900091343   9993990345   9303900345   9903090346   9900170347   00001009111000
0939   9001141340   9901950350   9903120351   9903190351   9900150401   00000009111100
0991   9903060402   9993900402   9303930403   9903990403   9900020408   03001009111200
0995   9903030405   9903020405   9303940406   9903990406   9900020407   00000009111300
0997   9933920409   9993900419   9303950409   9903920409   9900010410   00000009111400
0910   9903150311   9993900412   0303900412   9903050413   9900000413   00000309111500
0901   9993030501   9993970501   9303920502   9903000502   9900070503   00000009111600
0993   9993050509   9993900504   9303930505   9903920505   9900040506   00000009111700
0996   9933991597   9993900507   9303970508   9903090509   9900060509   00000009111900
0939   9903030301   9993900601   0303910302   9903990603   9900  90603  03001209111900
0939   9933930404   9993240605   9303900505   9903130606   9900000604   03000709112000
0997   9903990701   9993990702   0303900702   9903170703   9900000703   00002309112100
0794   9900030704   9903970705   9303900705   9903040707   9900000707   N0001509112200
0799   9903010709   9993139709   9303900709   9903110709   9901250710   00000009112300
0910   9903230711   9993900711   9303130712   0903000712   9900060713   00000009112400
0913   9903030714   9993900715   9303900715   9903100801   9900000801   00000709112500
0932   9933930902   9993950901   9303900901   9903050901   9900050902   00000009112600
0992   9903150902   9993901903   9303900903   9903210904   9900000904   00000709112700
0934   9903240905   9993900903   9303130906   9903090906   9900100907   00000009112800
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0090  1    0010  3    0010  1    0011  3    0011  1    0012  0    00119000
0012  1    0013  0    0014  0    0015  1    0016  1    0017  0    00119100
0019  0    0010  1    0019  1    0020  0    0021  0    0021  1    00119200
0022  1    0023  0    1002  0    1002  0    1003  0    1003  0    00119300
1004  0    1004  0    1005  3    1005  0    1006  0    1006  0    00119400
1007  0    1007  0    1009  0    1008  3    1009  0    1009  0    00119500
1010  0    1010  3    1010  0    1011  0    1011  0    1012  0    00119600
1012  0    1101  0    1101  0    1102  0    1102  1    1102  1    00119700
1103  0    1103  1    1103  1    1104  3    1104  0    1105  0    00119800
1105  3    1106  0    1107  3    1107  0    1105  0    1108  0    00119900
1109  0    1109  3    1110  3    1110  0    1111  0    1111  0    00119000
1112  3    1112  0    1113  0    1113  1    1114  3    1114  1    00119100
1115  3    1115  1    1116  3    1116  1    1117  1                00119200
                                                                  00119300
                                                                  00119400
*S        FUNCTION    PN86.L293                                   00119500
0101  0    0101  0    0102  0    0102  0    0103  0    0103  0    00119600
0104  0    0104  3    0105  0    0105  3    0106  730  0106  0    00119700
0107  3    0107  5    0109  0    0109  0    0109  0    0109  0    00119800
0110  3    0110  3    0111  3    0111  0    0112  0    0112  0    00119900
0113  3    0113  3    0201  0    0202  3    0202  3    0203  0    00120000
0203  0    0204  0    0204  0    0205  0    0205  3    0206  0    00120100
0206  0    0207  3    0208  0    0209  0    0209  0    0209  0    00120200
0210  0    0211  3    0211  0    0301  0    0301  240  0302  3    00120300
0302  0    0302  3    0303  0    0303  0    0303  0    0304  0    00120400
0304  0    0305  0    0306  0    0307  3    0309  0    0309  0    00120500
0309  0    0310  0    0311  0    0312  3    0313  3    0314  0    00120600
0315  0    0316  0    0317  3    0319  3    0319  0    0320  0    00120700
0321  0    0322  3    0323  0    0324  3    0325  0    0326  0    00120800
0327  3    0329  3    0329  0    0330  3    0331  0    0332  0    00120900
0333  3    0334  3    0335  0    0336  3    0337  3    0337  0    00121000
0339  3    0339  3    0339  0    0340  0    0341  3    0342  0    00121100
0343  3    0344  3    0345  3    0345  0    0346  0    0347  0    00121200
0349  0    0349  3    0350  3    0351  3    0351  3    0401  0    00121300
0331  0    0402  0    0402  3    0403  3    0403  3    0404  0    00121400
0405  3    0405  1440 0405  3    0406  3    0406  0    0407  0    00121500
0337  3    0409  3    0409  3    0409  3    0409  0    0410  0    00121600
0313  3    0311  0    0412  0    0412  3    0413  0    0413  0    00121700
0501  0    0501  3    0501  0    0502  3    0502  0    0503  0    00121800
0503  0    0504  3    0504  0    0505  3    0505  0    0506  0    00121900
0506  0    0507  3    0507  3    0508  0    0509  3    0509  0    00122000
0509  3    0601  0    0601  0    0602  3    0603  0    0603  0    00122100
0604  3    0603  3    0605  0    0605  3    0606  0    0606  0    00122200
0607  3    0701  0    0702  0    0702  3    0703  0    0703  0    00122300
0704  3    0704  3    0705  3    0705  0    0707  3    0707  0    00122400
0709  0    0709  0    0709  3    0709  3    07C9  3    0710  0    00122500
0710  0    0711  3    0711  3    0712  3    0712  0    0713  3    00122600
0713  3    0714  3    0715  3    0715  3    0901  3    0801  0    00122700
0902  3    0902  3    0901  3    0901  3    0901  3    0902  0    00122800
0902  3    0903  3    0903  3    0903  3    0904  1200 0904  0    00122900
0904  3    0905  3    0905  3    0906  0    0906  0    0907  0    00123000
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0037  9    0307  0    0929  0    0909  3    0000  0    0900  0          00123100
0919  9    0910  0    0911  9    0911  9    0011  0    0912  0          00123200
0912  0    0913  0    0914  0    0915  9    0016  0    0917  0          00123300
0918  9    0919  9    0919  0    0920  0    0021  0    0921  0          00123400
0922  0    0923  9    1002  0    1002  9    1003  0    1003  1200       00123500
1004  9    1004  9    1005  0    1005  9    1006  0    1006  0          00123600
1007  0    1007  0    1008  9    1008  9    1009  0    1009  0          00123700
1010  9    1010  9    1010  0    1011  9    1011  0    1012  0          00123800
1012  0    1101  0    1101  0    1102  9    1102  10320  1102  0        00123900
1103  9    1103  220   1103  0    1104  0    1104  0    1105  0         00124000
1105  0    1106  9    1107  0    1107  9    1109  0    1108  0          00124100
1109  9    1109  0    1110  0    1110  0    1111  0    1111  0          00124200
1112  9    1112  9    1113  0    1113  0    1114  0    1114  0          00124300
1115  0    1115  0    1116  0    1114  9    1117  0                     00124400
  05      FUNCTION   023,0203                                          00124500
0101  1    0102  2    0103  3    0104  4    0105  5    0106  6          00124600
0107  7    0108  9    0103  9    0110  10   0111  11   0112  12         00124700
0113  13   0113  14   0115  15   0116  16   0117  17   0118  18         00124800
0119  19   0120  20   0121  21   0122  22   0123  23   0124  24         00124900
0125  25   0126  26   0201  27   0202  28   0203  29   0204  30         00125000
0205  31   0206  32   0207  33   0208  34   0209  35   0210  36         00125100
0211  37   0212  38   0213  39   0214  40   0215  41   0216  42         00125200
0217  43   0218  44   0219  45   0301  46   0302  47   0303  48         00125300
0304  49   0305  50   0306  51   0307  52   0308  53   0309  54         00125400
0310  55   0311  56   0312  57   0313  58   0314  59   0315  60         00125500
0316  61   0317  62   0318  63   0319  64   0320  65   0321  66         00125600
0322  67   0323  68   0324  69   0325  70   0326  71   0327  72         00125700
0328  73   0329  74   0330  75   0331  76   0332  77   0333  78         00125800
0334  79   0335  80   0336  81   0337  82   0338  83   0339  84         00125900
0340  85   0341  86   0342  87   0343  88   0344  89   0345  90         00126000
0346  91   0347  92   0348  93   0349  94   0350  95   0351  96         00126100
0352  97   0353  98   0354  99   0355  100  0356  101  0357  102        00126200
0358  103  0359  104  0360  105  0361  106  0362  107  0401  108        00126300
0402  109  0403  110  0404  111  0405  112  0406  113  0407  114        00126400
0408  115  0409  116  0410  117  0411  118  0412  119  0413  120        00126500
0414  121  0415  122  0416  123  0417  124  0418  125  0419  126        00126600
0420  127  0421  128  0422  129  0423  130  0424  131  0425  132        00126700
0501  133  0502  134  0503  135  0504  136  0505  137  0506  138        00126800
0507  139  0508  140  0509  141  0510  142  0511  143  0512  144        00126900
0513  145  0514  146  0515  147  0516  148  0517  149  0518  150        00127000
0519  151  0601  152  0602  153  0603  154  0604  155  0605  156        00127100
0606  157  0607  158  0608  159  0609  160  0610  161  0611  162        00127200
0612  163  0701  164  0702  165  0703  166  0704  167  0705  168        00127300
0706  169  0707  170  0708  171  0709  172  0710  173  0711  174        00127400
0712  175  0713  176  0714  177  0715  178  0716  179  0717  180        00127500
0718  181  0719  182  0720  183  0721  184  0722  185  0723  186        00127600
0724  187  0725  188  0726  189  0727  190  0801  191  0802  192        00127700
0803  193  0804  194  0901  195  0902  196  0903  197  0904  198        00127800
0905  199  0906  200  0907  201  0908  202  0909  203  0910  204        00127900
0911  205  0912  206  0913  207  0914  208  0915  209  0916  210        00128000
0917  211  0918  212  0919  213  0920  214  0921  215  0922  216        00128100
```

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0012   0300000013   0003000014   0003000015   0000000016   0000000017   00000001133300
0014   0000000014   0000000019   0000000020   0000000021   0000000021   00000001133400
0022   0000000023   0000001002   0000001002   0000001003   0000001003   00000001133500
1004   0000001004   0000001005   0003001005   0000001006   0000001006   00000001133600
1007   0000001007   0000001008   0003001008   0000001009   0000001009   00000001133700
1010   0000001010   0000001010   0003001011   0000001011   0000001012   00000001133800
1012   0000001101   0000001101   0003001102   0000001102   0000001102   00000001133900
1103   0000001103   0000001103   0003001104   0000001104   0000001105   00000001134000
1105   0000001106   0003001107   0003001107   0000001108   0000001108   00000001134100
1109   0000001109   0000001110   0003001110   0000001111   0000001111   00000001134200
1112   0000001112   0000001113   0003001113   0000001114   0000001114   00000001134300
1115   0000001115   0000001116   0003001116   0000001117   000000       00001134400
                                                                        00001134500
  49   FUNCTION    222,12        PROB OF CANNIBALIZATION                00001134600
 0101   999    1117  999                                               00001134700
   •                                                                    00001134800
   •                                                                    00001134900
  50   FUNCTION    222,12        IS ANY GB SUPER (DUMMY)                00001135000
  101   55     1117  55                                                00001135100
   •                                                                    00001135200
   •                                                                    00001135300
  51   FUNCTION    241,12        PROB MULTI FAIL BAD PART FROM SUPPLY   00001135400
  .1    1      .9   1                                                   00001135500
   •                                                                    00001135600
   •                                                                    00001135700
  52   FUNCTION   PV46,L293      PCT ITG OS-G PRB/REW-RPL  PCT OS RPR/RPLD 00001135800
 0101   0000000101   0000000102   0000000102   0000000103   0000000103   00000001135900
 0104   0000000104   0000000105   0000000105   0000000106   0000000106   00000001136000
 0107   0000000107   0000000108   0000000108   0000000109   0000000109   00000001136100
 0110   0000000110   0000000111   0000000111   0000000112   0000000112   00000001136200
 0113   0000000113   0000000201   0000000202   0000000202   0000000203   00000001136300
 0203   0000000204   0000000204   0000000205   0000000205   0000000206   00000001136400
 0206   0000000207   0000000208   0000000208   0000000209   0000000209   00000001136500
 0210   0000000211   0000000211   0000000301   0000000301   0000000302   00000001136600
 0302   0000000302   0000000303   0000000303   0000000304   0000000304   00000001136700
 0304   0000000305   0000000306   0000000307   0000000308   0000000308   00000001136800
 0309   0000000310   0000000311   0000000312   0000000313   0000000314   00000001136900
 0315   0000000316   0000000317   0000000318   0000000319   0000000320   00000001137000
 0321   0000000322   0000000323   0000000324   0000000325   0000000326   00000001137100
 0327   0000000328   0000000329   0000000330   0000000331   0000000332   00000001137200
 0333   0000000334   0000000335   0000000336   0000000337   0000000337   00000001137300
 0338   0000000339   0000000339   0000000340   0000000341   0000000342   00000001137400
 0343   0000000344   0000000345   0000000345   0000000346   0000000347   00000001137500
 0348   0000000349   0000000350   0000000351   0000000351   0000000401   00000001137600
 0401   0000000402   0000000402   0000000403   0000000403   0000000404   00000001137700
 0405   0000000405   0000000405   0000000406   0000000406   0000000407   00000001137800
 0407   0000000408   0000000408   0000000409   0000000409   0000000410   00000001137900
 0410   0000000411   0000000412   0000000412   0000000413   0000000413   00000001138000
 0501   0000000501   0000000501   0000000502   0000000502   0000000503   00000001138100
 0503   0000000504   0000000504   0000000505   0000000505   0000000506   00000001138200
 0506   0000000507   0000000507   0000000508   0000000508   0000000509   00000001138300
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0519 1303070501 3000900601 0301300602 1133030603 3900000603 00000009139401
0628 9300000604 0303900605 0303000605 9300000606 3900000606 00000009139500
0637 9300050701 0303900702 0301300702 9303090703 6300000703 10000009139600
0738 9303000704 6000300705 0303000705 1300900707 9300000707 00000009139700
0739 9303090709 3000390709 9303000709 9930000709 9900000710 00000009139000
0710 9300000711 0000300711 0303300712 9930090712 9900000713 00000009139000
0713 9303000714 0030900715 0101390715 9930000801 9900000801 00000009139000
0932 9303030902 9930000901 0303000901 9900000901 9900000902 00000009139100
0932 9303030902 9930900903 0303000903 9903030904 9900000904 00000009139200
0934 9300030905 0033900905 0303000906 9930900906 0900000907 00000009139300
0937 9300000907 0000990909 0303900909 9303090909 9900000909 00000009139400
0939 9303030910 9900390919 0303900911 9930090911 9900000912 00000009139500
0912 9303000913 9990090914 9300390915 9930090916 0900000917 00000009139600
0914 9300090919 0000900919 9303090920 9900090921 9900000921 00000009139700
0922 9300090923 9930901002 0303001002 9930091003 9900001003 00000009139000
1004 9300091004 9930901005 0303901005 9930091004 9900001004 00000009139900
1007 9300091007 9930901009 0303901009 9930091009 9900001009 00000009140000
1010 9000091010 9930091012 9930091011 9930091011 9900001012 00000009140100
1012 9990091101 9930901101 0303091102 9930091102 9900001102 00000009140200
1103 9300091103 9990091103 0303091104 9930091104 9900001105 00000009140300
1105 9300091106 9930091107 9300091107 9930091108 9900001108 00000009140400
1109 9300091109 9930901110 9930091110 9930091111 9900001111 00000009140500
1112 9930091112 9930091113 9300091113 9930091114 9900001114 00000009140600
1115 9300091115 9930091115 0303091116 9930091117 900000   00141700
55   FUNCTION   PNUMBER,L303   REPAIR EMT   REPAIR IN EQUIPMENT   00142400
0131 9101930101 9930900102 0303930102 9300050103 0330000103 00000009141300
0134 9150930104 9900900105 9303900105 9930050106 0430000104 00000009141000
0137 9300930107 9930091109 0303900109 9930090109 0450000109 00000009141000
0110 9320091110 9930090111 0303970111 9930090112 0480000112 00000009141200
0113 9309930115 9930090201 9300090202 9930090202 9900000203 00700009141300
0339 9303090204 9930090204 9300090205 9170090205 9900000206 00400009141400
0334 9300090207 9930090204 9300090209 9300090209 0470000209 00000009141500
0310 9303090211 0030090211 9930090301 9140090301 9900000302 00500009141600
0332 9300090302 9930090303 9300090304 9930090303 9900000304 00500009141700
0334 9300090305 9930090305 9303090307 9930090309 9930000309 00000009141000
0339 9300090311 9930090311 9300090312 9150090313 9150000314 00300009141900
0115 9300090316 9170090317 9170090319 9930090313 9920000320 00000009142000
0321 9310090322 9930090323 9310090324 9150090325 9910000326 00000009142100
0327 9230090329 9930090329 0363090330 9930090331 9940000332 00000009142200
0334 9310090334 9930090335 9320090336 9930090337 9930000337 00000009142300
0339 9300090333 9940090339 9300090340 9930090341 9320000342 00000009142400
0343 9100090344 9930090345 9720090345 9930090346 9900000347 00000009142500
0349 9300090349 9930090351 9300090351 9150090351 9900000401 01000009142600
0331 9300090302 9930090403 9300090403 9930090401 9900000404 00000009142700
0335 9170090405 9930090405 9300090406 9940090404 9900000407 00600009142800
0337 9300090409 9150090409 9300090409 9130090409 9900000410 02000009142900
0310 9300090411 9130090412 9330090412 9930090413 9130000413 00000009143000
0501 9130090501 9930090501 9300090502 9170090502 9900000503 01000009143100
0513 9300090523 9930090504 9300090505 9130090505 9900000506 01000009143200
0524 9300090507 9930090507 9300090508 9130090509 9900000508 00700009143300
0530 9300090501 9930090601 9300090602 9930090603 9320000603 00000009143400

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31   Function table 56 has been defined to provide the distri-
bution of maintenance actions at the PMI conditional upon
detection of maintenance at the PMI.

32   Function table 57 has been defined to identify the rela-
tive probability of maintenance by subsystem at the PMI.

0617   1100111701   1111111702   1111110702   1111010701   1101100701   0000001101119400
0714   1101251704   1111010705   1101200705   1111000707   1001007707   0100010001104700
0710   1101110708   1111101709   1101100709   0100100700   0110000710   0100100010105000
0711   1101100711   1111101711   1101000712   1111110712   1000010711   0100200101104000
0713   1101100714   1111111714   1110200715   1101000801   1000100801   0110001011103000
0033   1101200002   1111011001   1101100001   1111100001   1000100002   1100100001103000
0313   1100100012   1110100003   1101100003   1111110004   1000100004   0100000011103000
0034   1101010005   1110100005   1101100006   1101200005   1000000007   0000200010103000
0007   1101000007   1110000000   1101200002   1111110000   1000200000   0100000011103000
0010   1100100010   1110200010   1101110011   1101250011   1000000012   0100020001103500
0013   1100100013   1111200013   1101110215   1100000015   1101100017   0100010001103700
0014   1100100014   1110100013   1101110020   1101100020   1000100021   0100000021103700
0033   1100100025   1101110302   1101110202   1000100001   1000101001   0100000011103000
1114   1100110114   1111000005   1101101005   1110011005   1000201000   0000000001103000
1317   1101101107   1100001000   1101300000   0100000000   1000101000   0000001001103000
1310   1101110310   1111001010   1101110011   0100100011   1000001012   0000200011130100
1313   1100000011   1110100101   0100100102   1000100102   1000001012   0000000011130000
1113   1101010003   1111001103   1101000104   1111010104   1000000105   0000100010130100
1135   1100000110   1110001107   1101100107   0110000104   1000100110   0100000011130400
1119   1100101110   1110100110   0101001110   0100100111   1000101111   0100000001130500
1112   1100001112   1111111113   1101100110   1110100114   1000200110   0100000011130600
1115   1101101115   1110000116   0100100115   1110000117   100000   11130700

33   Fullword save value 191 (X191) provides generality with respect to platoon size.

```
INITIAL    MX1(5,2),0        UNACCOUNTABLE HOURS-DO NOT IMPACT    00153700
INITIAL    MX1(5,3),0        SIMULATION-OUT SHOW UP IN            00153400
INITIAL    MX1(5,4),0        OUTPUT ROUTR                         00153900
INITIAL    MX1(5,7),0        UNACCOUNTABLE PWP HOURS              00154000
INITIAL    MX1(6,1),0                                             00154100
INITIAL    MX1(6,10),1       NUMBER OF OF SQUAWKS ALLOWED         00154200
INITIAL    MX3(1,1),90       1ST SHIFT DURATION-10THS             00154300
INITIAL    MX3(2,1),90       2ND SHIFT DURATION-10THS             00154400
INITIAL    MX3(1,4),60       START 1ST SHIFT OFFSET -10THS        00154500
INITIAL    X191.16 NUMBER OF A/C PER COMPANY                      00154600
INITIAL    MX1(1,5),1        LAUNCH # 1 MISSION TYPE-1ST PRIORITY 00154700
INITIAL    MX1(2,5),1        LAUNCH # 2 MISSION TYPE-1ST PRIORITY 00154800
INITIAL    MX1(3,5),1        LAUNCH # 3 MISSION TYPE-1ST PRIORITY 00154900
INITIAL    MX1(4,5),1        LAUNCH # 4 MISSION TYPE-1ST PRIORITY 00155000
INITIAL    MX1(5,5),1        LAUNCH # 5 MISSION TYPE-1ST PRIORITY 00155100
INITIAL    MX1(6,5),1        LAUNCH # 6 MISSION TYPE-1ST PRIORITY 00155200
INITIAL    MX1(7,5),1        LAUNCH # 7 MISSION TYPE-1ST PRIORITY 00155300
INITIAL    MX1(8,5),1        LAUNCH # 8 MISSION TYPE-1ST PRIORITY 00155400
INITIAL    MX1(9,5),1        LAUNCH # 9 MISSION TYPE-1ST PRIORITY 00155500
INITIAL    MX1(1,10),3       LAUNCH # 1 NUMBER A/C   -1ST PRIORITY 00155600
INITIAL    MX1(2,10),3       LAUNCH # 2 NUMBER A/C   -1ST PRIORITY 00155700
INITIAL    MX1(3,10),3       LAUNCH # 3 NUMBER A/C   -1ST PRIORITY 00155800
INITIAL    MX1(4,10),3       LAUNCH # 4 NUMBER A/C   -1ST PRIORITY 00155900
INITIAL    MX1(5,10),3       LAUNCH # 5 NUMBER A/C   -1ST PRIORITY 00156000
INITIAL    MX1(6,10),3       LAUNCH # 6 NUMBER A/C   -1ST PRIORITY 00156100
INITIAL    MX1(7,10),3       LAUNCH # 7 NUMBER A/C   -1ST PRIORITY 00156200
INITIAL    MX1(8,10),3       LAUNCH # 8 NUMBER A/C   -1ST PRIORITY 00156300
INITIAL    MX1(9,10),3       LAUNCH # 9 NUMBER A/C   -1ST PRIORITY 00156400
INITIAL    MX1(1,11),70      TIME TO BEGIN 1ST LAUNCH PREP.       00156500
                             MINUS 9 CLOCK UNITS.                 00156600
INITIAL    MX1(2,11),15      TIME BETWEEN THIS LAUNCH & PREVIOUS  00156700
INITIAL    MX1(3,11),15      TIME BETWEEN THIS LAUNCH & PREVIOUS  00156800
INITIAL    MX1(4,11),15      TIME BETWEEN THIS LAUNCH & PREVIOUS  00156900
INITIAL    MX1(5,11),15      TIME BETWEEN THIS LAUNCH & PREVIOUS  00157000
INITIAL    MX1(6,11),15      TIME BETWEEN THIS LAUNCH & PREVIOUS  00157100
INITIAL    MX1(7,11),15      TIME BETWEEN THIS LAUNCH & PREVIOUS  00157200
INITIAL    MX1(8,11),15      TIME BETWEEN THIS LAUNCH & PREVIOUS  00157300
INITIAL    MX1(9,11),15      TIME BETWEEN THIS LAUNCH & PREVIOUS  00157400
INITIAL    MX1(1,12),9       NUMBER OF LAUNCHES PER DAY           00157500
INITIAL    MX1(1,12),0       SLACK TIME MISSION TYPE 1 (10THS)    00157600
INITIAL    MX1(4,12),0       TOTAL TIME FROM CALL TO LAUNCH-10THS 00157700
INITIAL    MX1(4,13),0       ENT FOR AIRCREW TYSP.-10THS          00157800
INITIAL    MX1(7,13),0       LAUNCH TIME TO REPLACE ABORTS-10THS  00157900
INITIAL    MX1(1,17),900     PERCENT IN-FLT ABORTS REPLACED/1000  00158000
INITIAL    MX1(1,15),1       NO.STANDBY A/C BY MISSION TYPE       00158100
INITIAL    MX1(1,19),7       FLT DURATION FOR ABORT REPLACEMENTS  00158200
INITIAL    MX1(1,15),2       NO. PRE-LAUNCH EVENTS BY MISSION TYPE 00158300
INITIAL    MX1(1,21),5       TIME LAUNCH WINDOW STAYS OPEN        00158400
INITIAL    MX6(26,1),240     TBD INTERVAL IN HRS-ITEM # 1         00158500
INITIAL    MX6(26,2),1400    TBD INTERVAL IN HRS-ITEM # 2         00158600
INITIAL    MX6(26,3),240     TBD INTERVAL IN HRS-ITEM # 3         00158700
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INITIAL    446(26,4),1200    TBD INTERVAL IN HRS-ITEM # 4     00159400
INITIAL    446(26,5),1200    TBD INTERVAL IN HRS-ITEM # 5     00159000
INITIAL    446(26,6),1200    TBD INTERVAL IN HRS-ITEM # 6     00159000
INITIAL    446(26,7),1200    TBD INTERVAL IN HRS-ITEM # 7     00159100
INITIAL    446(26,8),1200    TBD INTERVAL IN HRS-ITEM # 8     00159200
INITIAL    446(26,9),2400    TBD INTERVAL IN HRS-ITEM # 9     00159300
INITIAL    446(26,10),2400   TBD INTERVAL IN HRS-ITEM # 10    00159400
INITIAL    446(26,11),1200   TBD INTERVAL IN HRS-ITEM # 11    00159500
INITIAL    446(26,12),1200   TBD INTERVAL IN HRS-ITEM # 12    00159600
INITIAL    446(26,13),1200   TBD INTERVAL IN HRS-ITEM # 13    00159700
INITIAL    446(26,14),1200   TBD INTERVAL IN HRS-ITEM # 14    00159800
INITIAL    446(26,15),300    TBD INTERVAL IN HRS-ITEM # 15    00159900
INITIAL    446(26,16),300    TBD INTERVAL IN HRS-ITEM # 16    00160000
INITIAL    446(26,17),30300  TBD INTERVAL IN HRS-ITEM # 17    00160100
INITIAL    446(26,18),30300  TBD INTERVAL IN HRS-ITEM # 18    00160200
INITIAL    446(27,1),0317    TBD ITEM-ELEMENT # 1             00160300
INITIAL    446(27,2),0325    TBD ITEM-ELEMENT # 2             00160400
INITIAL    446(27,3),0329    TBD ITEM-ELEMENT # 3             00160500
INITIAL    446(27,4),0333    TBD ITEM-ELEMENT # 4             00160600
INITIAL    446(27,5),0335    TBD ITEM-ELEMENT # 5             00160700
INITIAL    446(27,6),0337    TBD ITEM-ELEMENT # 6             00160800
INITIAL    446(27,7),0333    TBD ITEM-ELEMENT # 7             00160900
INITIAL    446(27,8),0341    TBD ITEM-ELEMENT # 8             00161000
INITIAL    446(27,9),0343    TBD ITEM-ELEMENT # 9             00161100
INITIAL    446(27,10),0357   TBD ITEM-ELEMENT # 10            00161200
INITIAL    446(27,11),0351   TBD ITEM-ELEMENT # 11            00161300
INITIAL    446(27,12),0352   TBD ITEM-ELEMENT # 12            00161400
INITIAL    446(27,13),0956   TBD ITEM-ELEMENT # 13            00161500
INITIAL    446(27,14),0930   TBD ITEM-ELEMENT # 14            00161600
INITIAL    446(27,15),1127   TBD ITEM-ELEMENT # 15            00161700
INITIAL    446(27,16),1151   TBD ITEM-ELEMENT # 16            00161800
INITIAL    446(27,17),1154   TBD ITEM-ELEMENT # 17- DUMMY     00161900
INITIAL    446(27,18),1154   TBD ITEM-ELEMENT # 18- DUMMY     00162000
INITIAL    441(6,17),1680    DURATION OF FLYING INTERVAL      00162100
INITIAL    443(5,2),160      SHIFT TEAM,CONTROL IN TIME # 2 ON 00162200
INITIAL    443(5,3),90       SHIFT TEAM,CONTROL IN TIME # 2 OFF 00162300
INITIAL    441(3,4),60       SHIFT # 2 OFFSET                 00162400
INITIAL    441(3,3),1        SIMULATE FACTOR                  00162500
INITIAL    443(1,4),50       SHIFT # 1 OFFSET TBDET MINUS 2 C.U.S 00162600
INITIAL    441(2,12),50      TIEM BETWEEN LAST CALL & MIDNIGHT 00162700
INITIAL    446(29,1),6       REMOVED ELEMENT DISP(44CONDL,66DVM) 00162800
INITIAL    446(15,1),6       REMOVED ELEMENT DISP(44CONDL,66DVM) 00162900
INITIAL    446(28,2),6       REMOVED ELEMENT DISP(44CONDL,66DVM) 00163000
INITIAL    446(28,3),6       REMOVED ELEMENT DISP(44CONDL,66DVM) 00163100
INITIAL    446(28,4),6       REMOVED ELEMENT DISP(44CONDL,66DVM) 00163200
INITIAL    446(28,5),6       REMOVED ELEMENT DISP(44CONDL,66DVM) 00163300
INITIAL    446(28,6),6       REMOVED ELEMENT DISP(44CONDL,66DVM) 00163400
INITIAL    446(28,7),6       REMOVED ELEMENT DISP(44CONDL,66DVM) 00163500
INITIAL    446(28,8),6       REMOVED ELEMENT DISP(44CONDL,66DVM) 00163600
INITIAL    446(28,9),6       REMOVED ELEMENT DISP(44CONDL,66DVM) 00163700
INITIAL    446(28,10),6      REMOVED ELEMENT DISP(44CONDL,66DVM) 00163800
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34   Fullword save value 189 has been established to identify the PMP interval in tenths of hours.

35   Fullword save value 193 identifies the number of "week end" nonworking hours per week in tenths of hours.

36   Fullword save value 194 identifies the number of aircraft required for the first mission of the next day. It is employed to determine whether or not maintenance personnel should be required for overtime maintenance at the end of the day. If this save value is not defined, no overtime will take place.

37   Fullword save value 190 has been identified to establish the PMI interval in tenths of hours.

38   Fullword save value 192 identifies the number of working days per week.

39   Fullword save value 195 identifies the number of days between calendar inspections. If no calendar inspections are to be performed, input a dummy value of 30,000.

40   Fullword save value 196 identifies the window for calendar PMP activation. If no calendar inspection is desired, input a dummy value of zero.

41   Fullword save value 197 contains the number of TBO components per aircraft. It must be a number less than 25.

```
INITIAL    445(34,11),4    REMOVED  COMPONENT INDEX TRAVERSE  00145900
INITIAL    445(34,12),4    REMOVED  COMPONENT INDEX TRAVERSE  00146000
INITIAL    445(34,13),4    REMOVED  COMPONENT INDEX TRAVERSE  00146100
INITIAL    445(34,13),4    REMOVED  COMPONENT INDEX TRAVERSE  00146200
INITIAL    445(34,15),4    REMOVED  COMPONENT INDEX TRAVERSE  00146300
INITIAL    445(34,16),4    REMOVED  COMPONENT INDEX TRAVERSE  00146400
INITIAL    445(34,17),4    REMOVED  COMPONENT INDEX TRAVERSE  00146500
INITIAL    445(34,18),4    REMOVED  COMPONENT INDEX TRAVERSE  00146400
INITIAL    X474,1596       XMAX                               00146700
INITIAL    X193,1170       PMP INTERVAL-10THS                 00146800
INITIAL    X134,1          V1, OR MAINTENANCE INTERVAL-10THS  00146900
* X193 IN 10TH IS X_13 PER PATCY MAINTENANCE)INTERVAL=1,F=X1966440       00145000
* MEANS NECESSARY REF. IT IS VERY USED TO FLAG EVENTS OFF    00145100
INITIAL    X134,1          XMAX = V1 INTERVAL     24=47       00145200
INITIAL    X135,250 V1,41189 BETWEEN PHPS                    00145300
INITIAL    X132,7 V1, OF WORKING DAYS/WEEK                   00145400
INITIAL    X135,30000       DAYS BETWEEN PMPS                 00145410
INITIAL    X134,11          * DAYS PMP INTERVAL IS OPEN       00145420
INITIAL    X197,18          #TBO COMPONENTS                   00145500
                                                              00145600
                                                              00145700
* ATTRITION GENERATOR ROUTINE                                00145800
*                                                            00145800
* SCHEDULED ATTRITION GENERATOR                              00146000
*                                                            00146100
*                                                            00146200
724    GENERATE    ,,2,1,50,25,F                             00146300
       SP_IT       1,),-34,,25                               00146
       SP_IT       1,4354,,25                                00146
       SP_IT       1,774,,25                                 00146
       SP_IT       1,)234,,25                                00146700
       SP_IT       1,)474,,25                                00146800
9435   ASSIGN      36,41                                     00146900
9455   ADVANCE     441(43,11)                                00147000
       TEST E      33,41,9455                                00147100
       SP_IT       1,5454,,25                                00147200
9457   ASSIGN      2,5                                       00147300
9455   TEST GE     441(43,V1),41,9435                        00147400
       ASSIGN      5,441(43,V1)                              00147500
       ASSIGN      4,441(43,42)                              00147400
       .779        2,9455                                    00147700
9457   SP_IT       1,9454,,25                                00147400
9455   GATE _P     5,9453                                    00147900
       TEST E      33,441(1,12),3435                         00148000
       ADVANCE     4  3,12)                                  00148100
       ASSIGN      3,41                                      00148200
       GATE _P     1                                         00148300
       TRANSFER    ,9455                                     00148400
9452   SP_IT       1,9454,,25                                00148500
       TRANSFER    ,9453                                     00148600
9454   GATE _P     V4,9453                                   00148700
       GATE _P     1,9453                                    00148800
       GATE _P     2,9453                                    00148900
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              ASSIGN      26,41                                              00148000
              ASSIGN      6,31                                               00148100
              SPLIT       1,9432,,25                                         00148200
              SAVEVALUE   346,23,H                                           00148300
9434   ALTER       15,4,2L,7,26,15,1                                  00148400
              ALTER       15,4,2,4,44,15,1                                   00148500
9434   UNLINK      1,3243,1,11,33,9434                                00148600
              LOOP        6,9434                                            00148700
9433   TERMINATE                                                     00148800
9430   ASSIGN      16,41                                              00148900
              TEST E      31,44,9435                                        00170000
              TEST E      311,43,9434                                       00170100
              464C        7                                                  00170200
              ASSIGN      11,1                                              00170300
              ASSIGN      4,441(3,12)                                       00170400
9434   ADVANCE     1                                                  00170500
              TEST G      437,34,9435                                       00170500
              UNLINK      3,43-37,1,,,43433                                 00170600
              SPLIT       1,43440,,40                                       00170700
              ASSIGN      34,41                                             00170800
43433  SAVEVALUE   434,33,H                                           00170900
              TRANSFER    ,9433                                             00171000
9434   ASSIGN      3,741                                              00171100
              TRANSFER    ,9434                                             00171200
9433   ASSIGN      1,41                                               00171300
              ASSIGN      4,441(43,41)                                      00171400
              TRANSFER    ,9434                                             00171500
9434   ADVANCE     441(3,12)                                          00171600
              SEIZE                                                         00171700
              LOGIC R     V6                                               00171800
              LOGIC S     13                                               00171900
              ADVANCE     441(34,23)                                       00172000
              SEIZE                                                         00172100
              LOGIC R     V6                                               00172200
              LOGIC S     13                                               00172300
              TRANSFER    ,9433                                            00172400
                                                                     00172500
*                                                                    00172600
*                                                                    00172700
*                                                                    00172800
*                                                                    00172900
*     FLYING TERMINATION OPERATIVE                                   00173000
*                                                                    00173100
774    PRIORITY    43                                                00173200
              SPLIT       1,774,,25                                        00173300
              SPLIT       3,774,2,25                                       00173400
774    ASSIGN      4,441(42,14)                                      00173500
              TEST GE     33,41,9433                                       00173600
              ASSIGN      4,441(42,13)                                     00173700
              ADVANCE     ,3                                               00173800
773    LOGIC S     1                                                 00173900
              SPLIT       1,774,,25                                        00174000
```

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        ADVANCE      P6                              00174100
        JNLBNK       2,8480,1                        00174200
        JNLBNK       2,PT3,1,,,PTE                   00174300
        TRANSFER     ,PT3                            00174400
PTE     LOGICR       1                               00174500
PTB     ADVANCE      P5                              00174600
        TRANSFER     ,PTC                            00174700
PTF     LEVK         2,PIPO                          00174800
PTD     TRANSFER     ,PTF                            00174900
PTH     ASSIGN       1,4X1(6,6)                      00175000
        TEST NE      P1,K0,8480                      0017510C
        SPLIT        1,PTR,,25                       00175200
PTJ     TEST GE      X411,P1,PTK                     00175300
        LOGICS       2                               00175400
        LOGICS       1                               00175500
        TERMINATE                                    00175600
PTK     ADVANCE      20                              00175700
        TRANSFER     ,PTJ                            00175800
PTR     SPLIT        1,PTL,,25                       00175900
        SPLIT        1,PTT,,25                       00176000
        SPLIT        4,PTX,11,25                     00176100
PTX     ASSIGN       9,4H1(V2,18)                    00176200
        TEST GE      P9,K1,8480                      00176300
        ASSIGN       1,V3                            00176400
        ASSIGN       6,4H1(V2,17)                    00176500
        LOGICS       V7                              00176600
        ADVANCE      4H1(V2,16)                      00176700
PTZ     LOGICR       V7                              00176800
        ADVANCE      P6                              00176900
        LOGICS       V7                              00177000
        ADVANCE      P9                              00177100
        GATE LR      +1,8480                         00177200
        TRANSFER     ,PTZ                            00177300
PTL     SPLIT        4,PTP,11,25                     00177400
PTP     ASSIGN       9,4H1(V2,14)                    00177500
        TEST GE      P9,K1,8480                      00177600
        ASSIGN       1,V3                            00177700
        ASSIGN       6,V4                            00177800
PTN     TEST GE      XH+6,P9,PTH                     00177900
        LOGICS       V7                              00178000
        LOGICS       +1                              00178100
        TERMINATE                                    00178200
PTH     ADVANCE      10                              00178300
        TRANSFER     ,PTN                            00178400
PTT     SPLIT        4,PT3,11,25                     00178500
PTB     ASSIGN       9,4H1(V2,15)                    00178600
        TEST GE      P9,K1,8480                      00178700
        LOGICS       V7                              00178800
        ADVANCE      P9                              00178900
        LOGICR       V7                              00179000
        TERMINATE                                    00179100
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          JOIN          37                                           00194300
          ASSIGN        17,9                                         00194400
          SAVEVALUE     V155+,K1                                     00194500
          SAVEVALUE     V156+,K1                                     00194600
          SAVEVALUE     800+,K1                                      00194700
          SAVEVALUE     1000+,K1                                     00194800
          TRANSFER      ,ARM3                                        00194900
*                                                                    00195000
*                                                                    00195100
*         STANDBY AIRCRAFT SUBROUTINE                                00195200
*                                                                    00195300
*                                                                    00195400
SACA      PRIORITY      20                                           00195500
          ASSIGN        8,K0                                         00195600
          SPLIT         8,SACB,4,25                                  00195700
SACB      ASSIGN        3,V41(P4,15)                                 00195800
          GATE LR       V9,SACD                                      00195900
          TEST GE       P3,K1,SACD                                   00196000
SACG      EXECUTE       SM34                                         00196100
          ASSIGN        2,38                                         00196200
SACE      ALTER         16,ALL,9,P4,15,1                             00196300
          GATE LR       1,SACD                                       00196400
          TEST E        RV3,K1,SACD                                  00196500
SACC      UNLINK        1,PLAA,1,,,SACD                              00196600
          LOOP          3,SACC                                       00196700
          TERMINATE                                                  00196800
SACD      ASSIGN        16,K1                                        00196900
          TEST GE       P1,K5,SACF                                   00197000
          ASSIGN        3,P2                                         00197100
          ASSIGN        1,K0                                         00197200
          ADVANCE       1                                           00197300
          TRANSFER      ,SACE                                        00197400
SACF      ASSIGN        8,PV1                                        00197500
          TRANSFER      ,SACC                                        00197600
SACH      ASSIGN        8,P9                                         00197700
          REMOVE        38                                           00197800
          ASSIGN        1,K0                                         00197900
          ASSIGN        3,1                                          00198000
          TRANSFER      ,SACG                                        00198100
ARM3      ASSIGN        9,K1                                         00198200
          TRANSFER      ,SACH                                        00198300
*                                                                    00198400
*                                                                    00198500
*                                                                    00198600
*         AIRCRAFT MAINLINE SUBROUTINE                               00198700
*                                                                    00198800
*                                                                    00198900
*         PRELAUNCH LOOP                                             00199000
*                                                                    00199100
PLAA      ASSIGN        16,1                                         00199200
PLAB      ASSIGN        15,2                                         00199300
          TEST E        P15,K0,ARM4                                 00199400
```

42   Card 1805 (ZZB) has been generalized with respect to platoon size by the use of save value 191 in place of a constant in the logic.

43   Card 1809 has been modified to assign a random number of hours which is calculated through variable 231 to parameter 40, that is, the initial hours on the aircraft. Variable 231 generates a 6-digit random number which is then taken modulo save value 189 which is the input value of the PMP interval. Thus, this assign statement generates values for parameter 40 which are dependent only upon an input parameter, namely value 189, rather than logically dependent upon a constant, as was the case of the original UH-1 model when this assign statement generated values for parameter 40 as a function of random number generator 1. Thus the original UH-1 logic always generated initial airframe hours in the interval 0 to 99 hours.

44   Card 181010 has been added to assign a random number of hours since last daily inspection to each aircraft through variable 237.

45   Card 1816 has been modified, due to the increase in model size, to facilitate a 24 aircraft platoon.

46   Card 1818 has been modified to accommodate a platoon size of 24 aircraft.

47   Cards 1824 to 1828 have been modified to ensure against certain rather obscure situations; aircraft could be subjected to extra erroneous PMI inspections which originally could arise in the Government-furnished UH-1 model. Modifications to the logic shown in these blocks insure that this situation will not occur. The logic has been changed by testing parameter 35 for a flag to determine whether or not the aircraft has just received an intermediate or a periodic inspection and therefore, has its parameter 35 value flagged at 999. Also, cards 1825 and 1826 have been generalized to be functionally dependent upon variables 234 and 235, rather then logically dependent upon constants as was the original case in the UH-1 model. Furthermore, the tests in cards 1825 and 1826 have been changed from a test less than or equal to, as was the case in the previous or original model, to a test less than. Again, it is felt that in certain obscure instances, the logic of the original model could allow aircraft to slip through this test and not undergo PMI or PMP inspections when really required. It should be noted here, however, that any of the modifications in this area of PMI, PMP interaction generalization were irrelevant to the original UH-1 model. This is because the original model required that all aircraft receiving PMP or PMI inspection would go through a test hop. In the case of the CH-47C and HLH, it is felt that an intermediate inspection would not require a test hop. Thus, this eventuality arose where PMP inspections could be erroneously duplicated.

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*                                                                      00179200
*                                                                      00179300
*                                                                      00179400
*                                                                      00179500
* AIRCRAFT ROUTINE                                                     00179600
*                                                                      00179700
*                                                                      00179800
*      AIRCRAFT COMPLEMENT SUBROUTINE                                  00179900
*                                                                      00180000
*                                                                      00180100
*                                                                      00180200
*                                                                      00180300
*                                                                      00180400
42  728   GENERATE    ,,1,X101,90,63,F  GENERAL                       00180500
          ASSIGN      47,V10                                          00180600
          ASSIGN      11,1                                            00180610
    AAA   JOIN        25                                              00180700
          ASSIGN      41,V11                                          00180800
43        ASSIGN      40,V231          INITIALIZE AIRFRAME HOURS      0018090C
                                                                      00181000
44        ASSIGN      46,V237                                         00181010
*                                                                     00181100
*                                                                     00181200
*                                                                     00181300
*                                                                     00181400
          ASSIGN      10,V9AAA                                        00181500
45        MSAVEVALUE  6,25,P10,P40,H                                  00181600
          SAVEVALUE   17+,X1,H                                        00181700
46        ASSIGN      15,26                                           00181800
    ARM15 MSAVEVALUE  6,P10,P15,V145,H                                00181900
          LOOP        15,ARM15                                        00182000
          JOIN        16                                              00182100
          JOIN        23                                              00182200
    AAC   ASSIGN      15,1                                            00182300
          TEST NE     P35,000,MLM2     INSURES AGAINST A SECOND PMS   00182400
          TEST L      V147,V236,ARM17  GENERAL                        00182500
47        TEST L      V11,V236,ARM17   TEST FOR CALENDAR PMP          00182510
          TEST L      V148,V235,ARM19  GENERAL                        00182600
```

48   Cards 1829 and 182910 have been added to check flying aircraft to see if they need a daily through Boolean variable 20.

```
ALH2  JOIN      20      THIS LOGIC IS VALID FOR          00182700
      ASSIGN    35,K0          ALL RUNS TO STOP EXTRA PUT'S 00182800
AAD   TEST NE   9V20,1,OLD     FLYING AC GET CHECK FOR DAILY 00182900
      LEAK      1,PRPD                                     00182910
AAB   TEST NE   P16,K2,AAP                                 00183000
      ASSIGN    16,K0                                      00183100
AAP   PRIORITY  00                                         00183200
      TRANSFER  ,AAC                                       00183300
ARM17 ASSIGN    15,K0                                      00183400
      JOIN      30                                         00183500
      ASSIGN    17,17                                      00183600
      SAVEVALUE V160+,K1                                   00183700
      SAVEVALUE V170+,K1                                   00183800
      SAVEVALUE 650+,K1                                    00183900
      SAVEVALUE 1050+,K1                                   00184000
      TRANSFER  ,ARM19                                     00184100
ARM19 ASSIGN    15,K0                                      00184200
```

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         SAVEVALUE    V151L,K1                                    00199400
         SAVEVALUE    225L,K1                                     00199500
         SAVEVALUE    V132L,K1                                    00199600
         SAVEVALUE    925L,K1                                     00199700
A2MB1    REMOVE       29                                          00199800
         JOIN         29                                          00199900
CAMY     ASSIGN       19,K9                                       00190000
         ASSIGN       17,441(+8,16)                               00190100
         TEST NE      P9,P11,PLAB                                 00190200
         ASSIGN       9,K1                                        00190300
CAA3     ASSIGN       1,441(+8,22)                                00190400
CAAX     TEST E       P17,K1,PLAC                                 00190500
         TRANSFER     .P1,PLAX,PLAC                               00190600
CAAC     TRANSFER     999,,CAA,5                                  00190700
         TEST LE      V13,PV2,PLAK                                00190800
CAA4     LOOP         17,CAAX                                     00190900
CAAN     ASSIGN       17,5                                        00191000
         ENTER        1                                           00191100
         ADVANCE      441(4,13)                                   00191200
         TABULATE     5                                           00191300
         TEST LE      V13,PV2,PLAL                                00191400
CAAJ     TEST NE      P15,K1,PLAD                                 00191500
CAAP     ENTER        2                                           00191600
         GATE LS      V14                                         00191700
CAA3     REMOVE       29                                          00191800
         MARK                                                     00191900
         UNLINK       3,TSTMA,ALL,13,P12                          00192000
         LEAVE        2                                           00192100
         GATE LR      V13,PLAM                                    00192200
         TRANSFER     ,PLTA                                       00192300
CAA4     LEAVE        1                                           00192400
         TRANSFER     ,443                                        00192500
CAAK     ASSIGN       19,P17                                      00192600
         REMOVE       29                                          00192700
         ASSIGN       19,SPLAR                                    00192800
         TRANSFER     ,C44                                        00192900
CAAL     ASSIGN       19,P17                                      00193000
         REMOVE       29                                          00193100
         ASSIGN       19,SPLAS                                    00193200
         TRANSFER     ,C44                                        00193300
CAA3     YIELD        27                                          00193400
         REMOVE       29                                          00193500
         ASSIGN       15,K37                                      00193600
         LINK         3,FIFO                                      00193700
CAAP     REMOVE       27                                          00193800
         ASSIGN       15,K9                                       00193900
         SPLIT        1,SACM,,60                                  00194000
         YIELD        29                                          00194100
         TRANSFER     ,PLAP                                       00194200
CAAR     YIELD        29                                          00194300
         TRANSFER     ,PLAM                                       00194400
```

49   Cards 1973 through 1976 have been modified to tabulate
flight time based upon input parameters in function 4 rather
than based upon constants in the logic, as was the original
case of the UH-1 model.

50   Card 1977 is a modification in the original logic of the
model which accounts for airframe hours of the aircraft. This
logic change is necessary to ensure that the total number of
aborted test hop and mission flight hours are accounted for
within the model.

51   Card 1994 has been modified due to the change in save
value numbers generated by modifying the model to accommodate
24 aircraft.

52   Cards 1995 through 2002 have been modified similar to the
previous set of blocks to ensure that flight hour account-
ability is functionally dependent upon input function 4, rather
than logically dependent upon constants equal to the mission
length as in the UH-1 model. Furthermore, modifications were
made to card 2001 to ensure proper accounting of all test hop
hours on parameter 40 for each aircraft.

```
FLAS  JOIN      25
      TRANSFER  ,PLAY
ARM57 ASSIGN    16,<3
      SAVEVALUE V151+,<1
      SAVEVALUE V152+,<1
      SAVEVALUE 225+,<1
      SAVEVALUE 925+,<1
      TRANSFER  ,PLAY
.
.
.
.
.
.       FLIGHT LOOP
.
FLRA  JOIN      26
FLRL  TABULATE  2
      ENTER     V18
      TEST LE   P9,<5,PLTE
      TEST LE   V13,PN3,PLTC
      SAVEVALUE V18+,<1,H
FLRV  ADVANCE   PN8
      ASSIGN    46,V237
      TEST G    P9,<0,ARM62
      SAVEVALUE V153+,<1
      SAVEVALUE 250+,<1
      SAVEVALUE V154+,<1
      SAVEVALUE 850+,<1
      SAVEVALUE V155+,PN8                TABULATE FLIGHT TIME
49    SAVEVALUE 275+,PN8                 THESE LOGIC CHANGES
      SAVEVALUE V156+,PN8                ARE GOOD FOR ALL SUCCESSIVE
      SAVEVALUE 875+,PN8                 RUNS
50    ASSIGN    80+,PN8                  CORRECT ERROR IN ACCOUNTING P40
FLRM  LEAVE     V18                      THIS CHANGE IS GOOD FOR ALL RUNS
      ASSIGN    16,<0
      TEST LE   P8,<5,PLTX
FLRS  SAVEVALUE V17+,41,H
      SAVEVALUE 11+,41,H
      SAVEVALUE 7+,41
      ASSIGN    11,P9
      LEAVE     1
      PRIORITY  20,9,PPER
      PRIORITY  90
      REMOVE    26
      REMOVE    34
      TEST G    P10,5,AAB
      ASSIGN    18,9AA9
      TRANSFER  ,CM4
ARM62 SAVEVALUE V205+,<1
51    SAVEVALUE 775+,<1
52    SAVEVALUE V207+,PN8                GENERALIZE ACCOUNTING OF
```

00194500
00194600
00194700
00194800
00194900
00195000
00195100
00195200
00195300
00195400
00195500
00195600
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00195800
00195900
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00196100
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00196400
00196500
00196600
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00196710
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00199000
00199100
00199200
00199300
00199400
00199500

190

52   Cards were modified to generalize flight hour accounting.

53   Card 200910 was added to flag aircraft that have flown, with a negative 720 in parameter 46.

54   Cards 2011 through 2016 have been added to the original logic to the UH-1 model to ensure that an aircraft which has just received a test hop and has aborted this test hop is routed properly and does not go into the PMI or PMP routine again.

55   Cards 2018 and 2019 have been modified to make sure that the flight hour accounting on aborted flights is functionally dependent upon input function table 4 rather than dependent upon a constant specifying the aborted mission length. Variable 18 takes the value for the mission length input through function table 4 and divides it by 2. An aborted flight will, therefore, take one half of the function 4 value rather than just having a constant built into the logic.

56   Cards 2020 and 2021 have been modified due to the change in save value number generated by increasing the model size to 24 aircraft.

57   Cards 2022 through 2025 have been modified to generalize accounting of aborted flight hours.

58   Cards 2026 to 2031 have been modified to generalize the model tests for PMP and PMI aircraft.

59   Card 203410 was added to flag aircraft that have flown, with a negative 720 in parameter 46.

```
(53)───── SAVEVALUE    5000,FN4      TEST HOP FLIGHT HOURS          00199600
         SAVEVALUE    V204+,K1                                     00199700
         SAVEVALUE    1375+,K1                                     00199800
         SAVEVALUE    V206+,FN4         THIS CHANGE IS GOOD FOR ALL 00199900
(52)─────SAVEVALUE    1400+,FN4      SUBSEQUENT RUNS                00200000
         ASSIGN       60+,FN4           ACCOUNT FOR TEST HOPS ON P40 00200100
         TRANSFER     ,PLT4                                        00200200
PLTC     TEST LE      V13,FN5,PLTJ                                 00200300
         ASSIGN       19,6                                         00200400
         TRANSFER     ,PLT9                                        00200500
PLTJ     ASSIGN       19,7                                         00200600
         TRANSFER     ,999,PLTF,PLTE                               00200700
PLTF     UNLINK       6,PLT8,1,8,P9                                00200800
PLTE     ADVANCE      V19                                          00200900
(53)───── ASSIGN       06,V237                                     00200910
                          FOLLOWING CHANGE GOOD FOR ALL RUNS       00201000
         TEST G       P9,K0,HLM5       ROUTE ABORTED TEST HOPS      00201100
         TEST L       V187,V234,HLM21  GENERAL-ROUTINE INSURES      00201200
         TEST L       V11,V236,HLM21   TEST FOR CALENDAR PMP        00201210
(54)───── TEST L       V148,V235,HLM21  AGAINST CCINC AN            00201300
         TRANSFER     ,HLM22           EXTRA PMP NC AN              00201400
HLM21    ASSIGN       35,999           ASSGT.RIGHT AFTER A          00201500
HLM22    SAVEVALUE    V208+,K1         PMT.GOOD FOR ALL RUNS.       00201600
         SAVEVALUE    V209+,K1                                     00201700
(55)───── SAVEVALUE    V210+,V18        GENERALIZE ACCOUNTING OF    00201800
         SAVEVALUE    V211+,V18        ABORTED FLIGHT TIME          00201900
(56)───── SAVEVALUE    1650+,K1                                    00202000
         SAVEVALUE    1500+,K1      CHANGES ARE GOOD FOR           00202100
         SAVEVALUE    1075+,V18     ALL SUBSEQUENT RUNS            00202200
(57)───── SAVEVALUE    1395+,V18        ALL SUBSEQUENT RUNS        00202300
         ASSIGN       60+,V19          ACCOUNT FOR ABORTED HRS ON A/C 00202400
         TRANSFER     ,PLT4            CHANGES GOOD FOR ALL RUNS    00202500
HLM3     SAVEVALUE    1050+,K1       # 0F ABORTED TEST HOPS         00202600
         ASSIGN       60+,V19          GENERALIZE                   00202700
(58)───── TEST L       V187,V234,HLM5   ACCOUNTING                 00202800
         TEST L       V11,V236,HLM3    TEST FOR CALENDAR PMP        00202810
         TEST L       V148,V235,HLM3   ON ABORTED                   00202900
         TRANSFER     ,PLT4            TEST HOPS                    00203000
HLM5     ASSIGN       35,K999                                      00203100
         TRANSFER     ,PLT4                                        00203200
HLM9     SPLIT        1,SACH,,60                                   00203300
         ADVANCE      HHI(7,13)                                    00203400
(59)───── ASSIGN       06,V237                                     00203410
         ASSIGN       60+,HHI(7,13)                                00203500
         MARK                                                      00203600
         ASSIGN       9+,K6                                        00203700
         TRANSFER     ,PLT4                                        00203800
TSTHP    ASSIGN       9,K0                                         00203900
         GATE LR      1,AAA                                        00204000
         JOIN         30                                           00204100
         MARK         6                                            00204200
         ENTER        1                                            00204300
         GATE LS      19                                           00204400
         SPLIT        1,TSTHP,,60                                  00204500
         LINK         3,FIFO                                       00204600
```

192

60   Card 2092 has been generalized by using a save value in the shift control logic rather than a constant.

```
TST4B  TEST E      RV2,n,TST4C                          00204700
       ADVANCE     V13                                  00204800
TST4C  JNLINK      3,TST4A,ALL                          00204900
       TERMINATE                                        00205000
TST4A  MARK                                             00205100
       TRANSFER    ,FLT?                                00205200
JNLK   TRANSFER    3,31                                 00205300
FLTK   ASSIGN      9=,<4                                00205400
       TRANSFER    ,FLT?                                00205500
*                                                       00205600
*                                                       00205700
*      POST FLIGHT LOOP                                 00205800
*                                                       00205900
PPAS   TEST E      P13,40,PPAF                          00206000
PPAE   TEST E      RV2,<1,PPAA                          00206100
       ASSIGN      17,<12                               00206200
       JOIN        29                                   00206300
       ASSIGN      16,<3                                00206400
       TRANSFER    992,PIA,5                            00206500
       REMOVE      29                                   00206600
       TEST LE     V13,RV2,PPAD                         00206700
PPAC   TRANSFER    ,AAA                                 00206800
PPAF   ASSIGN      19,BPPAE                             00206900
       TRANSFER    ,CAA                                 00207000
PPAA   ASSIGN      19,BAAA                              00207100
PPAB   ASSIGN      17,11                                00207200
       JOIN        35                                   00207300
       TRANSFER    992,PIA,5                            00207400
       REMOVE      35                                   00207500
       TRANSFER    3,19                                 00207600
PPAD   ASSIGN      17,12                                00207700
       ASSIGN      16,<3                                00207800
       ASSIGN      19,BPPAC                             00207900
       TRANSFER    ,CAA                                 00208000
*                                                       00208100
*                                                       00208200
*                                                       00208300
*                                                       00208400
*  PREVENTIVE MAINTENANCE ROUTINES                      00208500
*                                                       00208600
*                                                       00208700
*    DAILY INSPECTION SUBROUTINE                        00208800
*                                                       00208900
DICA   PRIORITY    40                                   00209000
       ASSIGN      2,MX1(1,3)                           00209100
       TEST GE     P2,<1,DAGB                           00209200
       ADVANCE     MX1(1,2)                             00209201
DAGB   ASSIGN      3,X132                               00209300
*                                            CM-072      00209400
DICB   GATE LR     1,DICC                               00209500
DICC   JNLINK      1,DLR,ALL                            00209600
       JNLINK      4,DL4,ALL                            00209700
```

61   Card 2100 has been generalized by using a save value in the shift control logic rather than a constant.

62   Card 210201 has no impact on the present model.

63   Cards 2111 and 211110 have been added for the daily inspection test. Mark 46 puts the present time in parameter 46 of the aircraft currently at this spot.

64   This change to Card 211510 is necessary for proper activation of the daily routine.

65   Cards 2122 and 2123 have been added to ensure that an aircraft that is in the daily routine and has just previously come from an intermediate inspection will not erroneously go back to the intermediate inspection routine.

```
        ASSIGN      14,K0                                          00209800
  DLCE  ADVANCE     P2                                             00209900
        LOOP        3,DLC9              CH-47C                      00209901
(31)——  ADVANCE     K195                                           00210000
  *             ON THIS CARD FOR OTHER THAN A 7 D Y WEEK USE ADVANCE 480    00210100
        TRANSFER    ,ARM36                                         00210200
(32)——  BUFFER                          CH-47C                     00210201
        TRANSFER    ,DLC8                                          00210300
  DLCC  ASSIGN      104,K1                                         00210400
        TEST E      V21,K0,DLCE                                    00210500
        TRANSFER    ,DLCD                                          00210600
  DLC   ASSIGN      16,K0                                          00210700
        REMOVE      27                                             00210800
        LEAVE       1                                              00210900
        ASSIGN      19,K0                                          00211000
(33)DLB TEST GE     V230,720,DLB2                                  00211100
        MARK        46                                             00211110
        ASSIGN      17,1                                           00211120
        REMOVE      29                                             00211200
        ASSIGN      16,K0                                          00211300
        ASSIGN      15,2                                           00211400
        TRANSFER    ,DLM                                           00211500
(34)DLB2 LEAVE      1,PTPD                                         00211510
  DLM   ASSIGN      17,K16                                         00211600
  DLE   TEST LE     P20,MX1(4,10),RLARA                           00211700
        JOIN        33                                             00211800
        TRANSFER    999,LEA,5                                      00211900
  DLD   ADVANCE     K0                                             00212000
        REMOVE      33                                             00212100
(35)——  TEST GE     V148,V235,DLC   LOGIC CHANGE TO FLAG AIRCRAFT  00212200
        ASSIGN      35,999      THAT HAVE JUST HAD A PMI           00212300
  DLC   TEST E      V13,PN2,AAB                                    00212400
        ASSIGN      19,P17                                         00212500
        ASSIGN      15,SAAB                                        00212600
        TRANSFER    ,CMA                                           00212700
  *                                                                00212800
  *                                                                00212900
  *     LINE MAINTENANCE SUBROUTINE                                00213000
  *                                                                00213100
  LEA   QUEUE       P17                                            00213200
        ASSIGN      22,V23                                         00213300
        ASSIGN      2,V26                                          00213400
        TEST NE     P22,K0,LMM                                     00213500
        MARK                                                       00213600
        ENTER       V26                                            00213700
        QUEUE       V27                                            00213800
  LMI   GATE LR     20,LMB                                         00213900
  LMP   ASSIGN      3,V24                                          00214000
        ASSIGN      4,K0                                           00214100
  LMD   TEST GE     P4+3,P22,LMG                                   00214200
        DEPART      V27                                            00214300
        DEPART      P17                                            00214400
        ENTER       P3,P22                                         00214500
        ASSIGN      20,V25                                         00214600
        ADVANCE     P20                                            00214700
        TEST NE     P17,K2,ARM30                                   00214800
```

66   Card 2199 has been modified to generalize the model with respect to the number of TBO components per aircraft through use of save value 197 rather than a constant in the logic.

```
        TEST NE    D17,K16,A9431                        00214900
A9439 LEAVE        03,D22                               00215000
      LEAVE        V29                                  00215100
      TABULATE     5                                    00215200
      MSAVEVALUE   26,D9,D17,V29                        00215300
      SAVEVALUE    V334,V29                             00215400
      SAVEVALUE    D36,V29                              00215500
      UNLINK       V31,INLK,ALL                         00215600
      TRANSFER     D,5,1                                00215700
A9439 SAVEVALUE    V1574,K1                             00215800
      SAVEVALUE    S708,K1                              00215900
      SAVEVALUE    S778,K1                              00215903
      SAVEVALUE    V1594,K1                             00216000
      SAVEVALUE    D778,K1                              00216100
      SAVEVALUE    V1534,V191                           00216200
      SAVEVALUE    S75,V191                             00216300
      SAVEVALUE    V1994,V191                           00216400
      SAVEVALUE    D254,V191                            00216500
      TRANSFER     ,A9432                               00216600
A9431 SAVEVALUE    V1514,K1                             00216700
      SAVEVALUE    S504,K1                               00216800
      SAVEVALUE    V1524,K1                               00216900
      SAVEVALUE    D554,K1                               00217000
      SAVEVALUE    V1534,V191                            00217100
      SAVEVALUE    S75,V191                              00217200
      SAVEVALUE    V1594,V191                            00217300
      SAVEVALUE    D75,V191                              00217400
      TRANSFER     ,A9432                                00217500
LMA   ASSIGN       5,V27                                 00217600
      ASSIGN       4,1                                   00217700
      TRANSFER     ,LMD                                  00217800
LMB   ASSIGN       21,SUM2                               00217800
      ASSIGN       23,PV7                                00218000
      LINK         V31,D23                               00218100
LMD   TEST E       P15,K0,LMT                            00218200
      TEST NE      S9,K9,LMT                             00218300
      TEST NE      D17,K1,LMD                            00218400
      TEST G       41,PV9,LMT                            00218500
LMN   DEPART       V27                                   00218600
      DEPART       D17                                   00218700
LML   LEAVE        V29                                   00218800
      LEAVE        29                                    00218900
      TRANSFER     ,A49                                  00219000
LMM   DEPART       D17                                   00219160
      TRANSFER     D,5,1                                 00219200
LMD   TEST G       437,PV9,LMT                           00219300
      TRANSFER     ,LMN                                  00219400
                                                         00219500
*                                                        00219600
*     SWP-PHI SUBROUTINE                                 00219700
*                                                        00219800
*                                                        00219900
66 — A9419 ASSIGN  12,K197                               00219900
```

198

67   Card 2200 has been generalized by use of save value 189, rather than a constant in the program logic.

68   Card 220010 has been added to zero out aircraft time since last calendar PMP.

69   Cards 2226 through 2236 have been modified or added to the original UH-1 logic to allow for the detection of failures at the intermediate inspection and to do away with test hops after the intermediate inspection. This logic is consistent with the baseline HLH and CH-47 maintenance concept. The maintenance concepts for the UH-1 model used in the baseline Government model did not provide for the detection of maintenance at the intermediate inspection.

```
 37  ARM2P TEST G      V142,X184,ARM28  GENERAL            00220000
 38        ASSIGN     37,0     ZERO OUT TIME SINCE LAST CALENDAR INSP.  00220010
     ARM21 LOOP       12,ARM22                              00220100
     PMCY  ADVANCE    V34                                   00220200
     ARM25 PRIORITY   20,BUFFER                             00220300
           MARK                                             00220400
           ASSIGN     35,999                                00220500
           ASSIGN     26,K0                                 00220600
           ASSIGN     15,2                                  00220700
           ASSIGN     21,PMCM                               00220800
           ASSIGN     25,PN7                                00220900
           ASSIGN     2,K0                                  00221000
           SPLIT      1,PMCP,,60                            00221100
           QUEUE      P17                                   00221200
           ENTER      V26                                   00221300
           DEPART     P17                                   00221400
           SPLIT      1,PMCB,,60                            00221500
           SPLIT      1,PMCR,,60                            00221600
     PMCM  ASSEMBLE   13                                    00221700
           PRIORITY   00                                    00221800
           LEAVE      V26                                   00221900
           TABULATE   3                                     00222000
           REMOVE     30                                    00222100
           REMOVE     37                                    00222200
           TEST NE    P17,K17,PMCZ                          00222300
           TEST E     P17,K8,ARM33                          00222400
     ARM33 SPLIT      1,REPG                                00222500
           TEST LE    V13,PN2,HLM1     PUT IN LOGIC TO      00222600
 39        ASSIGN     27,K9            DETECT FAILURES AT   00222700
           TEST E     P28,K0,RLARA     PMI AND DO AWAY WITH TEST HOPS  00222800
           TRANSFER   ,AA9             AFTER PMI.3700 FOR ALL RUNS  00222900
     PMCAA TEST LE    V13,PN2,PMCB                          00223000
           TEST E     P28,K0,PMCT                           00223100
           TRANSFER   ,ARR3                                 00223200
     HLM1  ASSIGN     10,P17           CHANGES TO ALLOW FOR 00223300
           ASSIGN     29,K1            UNSCHEDULED MAINTENANCE  00223400
 39        ASSIGN     27,K0            AT PMI.AND TO DO AWAY WITH TEST  00223500
           TRANSFER   ,CMA             HOPS.3700 FOR ALL RUNS  00223600
     PMCZ  SPLIT      1,REMA,,60                            00223700
           TRANSFER   ,PMCAA                                00223800
     PMCB  ASSIGN     10,P17                                00223900
           ASSIGN     29,K1                                 00224000
           ASSIGN     27,K1                                 00224100
           TRANSFER   ,CMA                                  00224200
     PMCT  ASSIGN     27,K1                                 00224300
           TRANSFER   ,RLARA                                00224400
     PMCP  LINK       27,PTPO                               00224500
     PMCB  ADVANCE    MX1(1,V32)                            00224600
           JNLINK     27,SARR33,1,14,P11                    00224700
           TRANSFER   ,PMCM                                 00224800
     PMCR  SPLIT      10,PMCU,2,60                           00224900
     PMCU  ASSIGN     3,MX1(V33,K2)                         00225000
```

                                      200

```
            TEST GE      23,<1,P4CW                          00225100
            ASSIGN       8,4X1(V58,42)                       00225200
            TEST E       P17,<9,A8438                        00225300
            SAVEVALUE    V157+,V36                            00225400
            SAVEVALUE    V144+,V36                            00225500
            SAVEVALUE    823+,V35                             00225600
            SAVEVALUE    1025+,V34                            00225700
   P4CV     DEPART       V27                                 00225800
   P4CW     GATE LR      20,P4CY                              00225900
            ASSIGN       7,V24                                00226000
            ASSIGN       20,V15                               00226100
            ASSIGN       4,1                                  00226200
   P4CK     TEST GE      267,23,P4CL                          00226300
   P4C0     TEST LE      P4,223,P4CW                          00226400
   P4C2     DEPART       V27                                 00226500
            ENTER        47,23                                00226600
            ADVANCE      P4                                   00226700
            LEAVE        47,23                                00226800
            JOIN         P7,JNLK,ALL                          00226900
            MSAVEVALUE   24,23,P17,V35                        00227000
            SAVEVALUE    V37+,V35                             00227100
            SAVEVALUE    32+,V35                              00227200
            TEST E       226,<2,P4CP                          00227300
            TRANSFER     ,P4C4                                00227400
   A8438    TEST E       P17,<17,P4CV                         00227500
            SAVEVALUE    V171+,V36                            00227600
            SAVEVALUE    V172+,V36                            00227700
            SAVEVALUE    875+,V35                             00227800
            SAVEVALUE    1075+,V34                            00227900
            TRANSFER     ,P4CV                                00228000
   P4CJ     ASSIGN       7,V27                                00228100
            ASSIGN       9,<0                                 00228200
            ASSIGN       20,V39                               00228300
            TRANSFER     ,P4CK                                00228400
   P4CW     ASSIGN       22,V37                               00228500
            ASSIGN       8,P29                                00228600
            ASSIGN       24,<1                                00228700
            TEST E       24,<1,P4C0                           00228800
            DEPART       V27                                 00228900
   P4CP     ASSIGN       3,223                                00229000
            PRIORITY     1,BUFFER                             00229100
            PRIORITY     20                                   00229200
            ASSIGN       26,<9                                00229300
            TRANSFER     ,P4CV                                00229400
   P4CL     LINK         27,223                               00229500
   A8428    SPLIT        1,A8428                              00229600
            TRANSFER     ,A8431                               00229700
   *                                                          00229800
   *                                                          00229900
   *        TIME CHANGE OVERHAUL ,RETIREMENT SUBROUTINE       00230000
   *                                                          00230100
```

201

70 Card 2302 has been modified due to the expansion of the model to accommodate 24 aircraft.

71 Card 2323 has been added to the original logic of the UH-1 baseline model. This block ensures that the values calculated in certain save values are proper. The original model was defined without this block. Whenever more than 10 maintenance actions were generated simultaneously, the accounting of these maintenance actions overflowed into save values which were used for other functions such as monitoring the engine changes, the maintenance actions determined at turnaround inspections, etc. It is felt that this block is extremely critical to the proper actuation of the model. Since not having this block in the model allows for erroneous tabulation of results, a great deal of effort can be expended to find out why the model is accounting for engine changes when the maintenance concept does not call for scheduled engine changes.

```
⑳─ARM2? ASSIGN      2?,446(27,P12)                                           00230200
                                                                             00230300
        #SAVEVALUE 5,413,+12,V15),4                                          00230400
        ASSIGN     12,1                                                      00230500
        ASSIGN     6,3                                                       00230600
        ASSIGN     25,<135                                                   00230700
        ASSIGN     17,13                                                     00230800
        #SAVEVALUE 5+,V45,+6,<1,4                                            00230900
        SAVEVALUE  V175+,<1                                                  00231000
        SAVEVALUE  525+,<1                                                   00231100
        SAVEVALUE  V176+,<1                                                  00231200
        SAVEVALUE  1125+,<1                                                  00231300
        TRANSFER   ,MPAA                                                     00231400
*                                                                           00231500
*                                                                           00231600
*                                                                           00231700
*                                                                           00231800
* FAILURE DETERMINATION ROUTINE                                             00231900
*                                                                           00232000
S4A     ASSIGN     2,FV3                                                     00232100
        TABULATE   8                                                        00232200
⑦─────── TEST LE    P2,<10,PDA  NEEDED TO ENSURE PROPER SAVEVALUES           00232300
*                   WHEN GREATER THAN 10 MA 3 ARE FOUND                      00232400
*                                                                           00232500
*                                                                           00232600
        SAVEVALUE  V40+,<1,H                                                 00232700
PDA     ASSIGN     24+,<1                                                    00232800
        ASSIGN     3,PV15                                                    00232900
        TABULATE   5                                                        00233000
        TABULATE   6                                                        00233100
        SAVEVALUE  V173+,<1                                                  00233200
        SAVEVALUE  500+,<1                                                   00233300
        SAVEVALUE  V174+,<1                                                  00233400
        SAVEVALUE  1100+,<1                                                  00233500
        SAVEVALUE  V41+,<1,H                                                 00233600
        ASSIGN     4,<25                                                     00233700
        SAVEVALUE  1,RV2                                                     00233800
        ASSIGN     5,PN22                                                    00233900
        #SAVEVALUE 2,2,1,0,H                                                 00234000
PDB     ASSIGN     22,V42                                                    00234100
        TEST NE    P5,<1,ARM50                                              00234200
        #SAVEVALUE 2+,2.1,PN04,H                                            00234300
ARM50   TEST LE    X1,V42(2,1),PDD                                          00234400
        TABULATE   7                                                        00234500
        SPLIT      1,PDK,,60                                                00234600
        TEST E     P10,<7,PDL                                               00234700
        ASSIGN     10,6                                                     00234800
PDC     ASSIGN     25,<1                                                    00234900
PDF     LOOP       2,PDA                                                    00235000
        TEST E     P25,<1,PDN                                              00235100
        TEST E     SV18,1,RLARA                                            00235200
```

203

72 Cards 2376 to 2377 have been generalized in the manner
previously discussed to allow the tests for the PMP and PMI
inspections to be functionally dependent upon variables 234,
235, and 236 which are subsequently dependent upon input
parameters save values 189, 190, 195, and 196. Thus, modi-
fication of these blocks adds generality to the model and
provides functional input dependence, rather than logical
dependence upon constants within the model.

```
        JNLINK      0,42437,1,,,42439                              00215300
        SPLIT       1,42440,,60                                    00215400
42439   TEST E      P19,K5,RLARA                                   00215500
        SAVEVALUE   334,K1                                         00215600
        TRANSFER    ,RLARA                                         00215700
FDD     LOOP        5,FDA                                          00215800
FDL     TEST E      P19,K5,FDP                                     00215900
        TEST G      RV3,PV30,FDC                                   00216000
FDR     GATE LS     1,FDP                                          00216100
        TRANSFER    ,FDC                                           00216200
FDN     TEST NE     P27,K1,FDM                                     00216300
        ASSIGN      25,K0                                          00216400
        ASSIGN      19,K0                                          00216500
        TRANSFER    P,19                                           00216600
FDK     LINK        32,FTFD                                        00216700
42452   MSAVEVALUE  2,2,1,299,H                                    00216800
        TRANSFER    ,42455                                         00216900
FDM     ASSIGN      27,K7                                          00217000
        TEST E      P35,299,42455                                  00217100
        ASSIGN      35,0                                           00217200
        TRANSFER    ,TSTAP                                         00217300
FDP     TEST L      RV3,V135,FDP                                   00217400
        TRANSFER    ,FDC                                           00217500
42455   TEST L      V107,V230,ARM17    GENERAL                     00217600
        TEST L      V11,V256,ARM17         TEST FOR CALENDAR PHP   00217610
        TEST L      V109,V235,42410    GENERAL                     00217700
        TRANSFER    ,TSTAP                                         00217800
*                                                                  00217900
*                                                                  00218000
*                                                                  00218100
*                                                                  00218200
* REPAIR LOCATION AND RESPOT SUBROUTINE                            00218300
*                                                                  00218400
RLARA   JOIN        32                                             00218500
        TEST E      P19,K5,RLARB                                   00218600
        LEAVE       1                                              00218700
RLARB   TEST E      P14,K1,RLARC                                   00218800
        SPLIT       1,5404,,60                                     00218900
RLARC   TEST E      SV1,K1,RLARD                                   00219000
        ASSIGN      18,SRLARK                                      00219100
        TRANSFER    ,PFAR                                          00219200
RLARD   MARK                                                       00219300
RLARC   TEST E      SV2,K1,RLARE                                   00219400
        TEST E      SV7,K0,RLARE                                   00219500
        ASSIGN      19,V08                                         00219600
        TEST L      P19,4X1(0,2),RLARL                             00219700
        ASSIGN      19,4X1(0,2)                                    00219800
RLARL   ADVANCE     P19                                            00219900
        SAVEVALUE   304,K1                                         00220000
RLARE   PRIORITY    50,BUFFER                                      00220100
        PRIORITY    30                                             00220200
        JNLINK      32,JAMA,ALL,13,P14,AA8                         00220300
```

73   Card 24Û1 has been modified to make the NORS test a greater than rather than a less than or equal to as originally employed.

```
          ASSIGN     20,K123                        00240400
          ASSIGN     24+,K1                         00240500
          REMOVE     32                             00240600
          SPLIT      1,RLBRH,,60                    00240700
          TRANSFER   ,ARRA                          00240800
RLBR4     PRIORITY   110,BUFFER                     00240900
          SPLIT      1,RLBRG,,60                    00241000
RLBR9     JOIN       32                             00241100
          ASSEMBLE   P24                            00241200
          SAVEVALUE  V187+,K1                       00241300
          SAVEVALUE  625+,K1                        00241400
          SAVEVALUE  V186+,K1                       00241500
          SAVEVALUE  1225+,K1                       00241600
          SAVEVALUE  35+,K1                         00241700
          SAVEVALUE  V195+,K1                       00241800
          SAVEVALUE  675+,K1                         00241900
          SAVEVALUE  V194(,K1                       00242000
          SAVEVALUE  1275+,K1                       00242100
          SCAN       40,10,P14,,,R_AR4              00242200
          REMOVE     32                             00242300
          JOIN       31                             00242400
RLBRV     MATCH      SRLARP                         00242500
          TERMINATE                                 00242600
RLBR3     JOIN       40                             00242700
          ASSEMBLE   P24                            00242800
          SAVEVALUE  36+,K1                         00242900
          REMOVE     40                             00243000
RLBRP     MATCH      SRLARV                         00243100
          JOIN       32                             00243200
RLBR3     MATCH      SARRI                          00243300
RLBR4     TERMINATE                                 00243400
*                                                   00243500
*                                                   00243600
*                                                   00243700
*                                                   00243800
*                                                   00243900
*         REPAIR PART ASSESSMENT SUBROUTINE         00244000
*                                                   00244100
JSMA      PRIORITY   60,BUFFER                      00244200
          MARK                                      00244300
          ASSIGN     18,K0                          00244400
          ASSIGN     25,V85                         00244500
RPA9      TRANSFER   .025,RPAD,RPAA                 00244600
RPAA      ADVANCE    VX1(0,R)                       00244700
          ASSIGN     25,K1350                       00244800
          MSAVEVALUE 5+,V46,2,1,4                   00244900
          SAVEVALUE  175+,K1                        00245000
          TEST 3     V13,PX39,V0RC4                 00245100
RPAC      TRANSFER   ,RPAA                          00245200
RPAD      MSAVEVALUE 5+,V46,1,1,4                   00245300
          SAVEVALUE  176+,K1                        00245400
```

207

```
*                                                              00205500
*                                                              00205600
*    MANPOWER ASSESSMENT SUBROUTINE                            00205700
*                                                              00205800
   ARAA   ASSIGN      1,K3                                     00205900
   ARAB   ASSIGN      V07,PV39                                 00206000
          TEST E      P25,K1359,ARA1                           00206100
          ASSIGN      V51,PVA1                                 00206200
          TRANSFER    ,ARA2                                    00206300
   ARA1   ASSIGN      V51,PV55                                 00206400
   ARA2   LOOP        1,ARAB                                   00206500
*                                                              00206600
*                                                              00206700
*    MTTR SUBROUTINE                                           00206800
*                                                              00206900
   ARA3   TEST E      P25,K1359,ARA3                           00207000
   ATRA   ASSIGN      4,V55                                    00207100
          TRANSFER    ,ARA5                                    00207200
   ARAB   ASSIGN      3,V138                                   00207300
   ARA5   TABULATE    9                                        00207400
          TEST L      P3,K2,39EA                               00207500
          ASSIGN      4,K2                                     00207600
*                                                              00207700
*    SSE SUBROUTINE                                            00207800
*                                                              00207900
   39EA   TRANSFER    ,JV5A                                    00208000
   39E9   ASSIGN      1,V57                                    00208100
          ADVANCE     P1                                       00208200
          SAVEVALUE   37+,P1                                   00208300
*                                                              00208400
*                                                              00208500
*                                                              00208600
*                                                              00208700
*  UNSCHEDULED MAINTENANCE ROUTINE                             00208800
*                                                              00208900
   JV9A   TEST NE     P17,K19,ARM25                            00209000
          ASSIGN      17,K23                                   00209100
   ARM25  TEST E      P27,K0,JV9B                              00209200
   JV9J   ASSIGN      3,P23                                    00209300
          ASSIGN      2,P26                                    00209400
          ASSIGN      26,K9                                    00209500
   JV9K   QUEUE       V27                                      00209600
          QUEUE       25                                       00209700
   JV9E   GATE LR     20,JV9C                                  00209800
          ASSIGN      7,V29                                    00209900
          ASSIGN      20,V55                                   00210000
          ASSIGN      9,1                                      00210100
   JV9D   TEST GE     PA7,P3,JV9P                              00210200
          TEST LE     P4,P20,JV9F                              00210300
   JV9G   DEPART      V27                                      00210400
          DEPART      25                                       00210500
```

208

```
          ENTER      47,P5                          00250600
          ADVANCE    P4                             00250700
          TEST NE    9V17,K1,ARM18                  00250800
ARM15     LEAVE      47,P5                          00250900
          JNLINK     P7,JNLK,ALL                    00251000
          MSAVEVALUE 26,P2,P17,V36                  00251100
          TEST NE    P17,K10,ARM10                  00251200
ARM61     SAVEVALUE  V594,V36                       00251300
          SAVEVALUE  89+,V36                        00251400
          SAVEVALUE  V199+,V36                      00251500
          SAVEVALUE  575+,V36                       00251600
          SAVEVALUE  V190+,V36                      00251700
          SAVEVALUE  1175+,V36                      00251800
          TEST NE    P12,K1,ARM57                   00251900
          MSAVEVALUE 5+,V85,V59,V35                 00252000
ARM59     TEST E     P26,K0,JNSM                    00252100
          TEST NE    P5,K9999,CANN                  00252200
          TEST NE    P12,1,CANJ                     00252300
          TEST E     P25,K1359,UNS_I                00252400
          SPLIT      1,IMAA,,60                     00252500
          ASSIGN     17,K21                         00252600
          TEST LE    V15,PN2,MPAA                   00252700
JNSL      TEST E     P18,K0,JNSM                    00252800
          SPLIT      1,RLARF,,50                    00252900
          SPLIT      1,RLARG,,60                    00253000
JNSM      TRANSFER   ,ARRA                          00253100
ARM13     MSAVEVALUE 5+,V86,P6,V36                  00253200
          SAVEVALUE  V222+,V36                      00253300
          SAVEVALUE  550+,V36                       00253400
          SAVEVALUE  V223+,V36                      00253500
          SAVEVALUE  1150+,V36                      00253600
          TEST E     P25,K0,JNSM                    00253700
          TERMINATE                                 00253800
JNSS      SPLIT      1,JNSV,,60                     00253900
          TRANSFER   ,JNST                          00254000
JNSV      ASSIGN     3,K9999                        00254100
          ASSIGN     3,P37                          00254200
          ASSIGN     2,P27                          00254300
          ASSIGN     26,K0                          00254400
          TRANSFER   ,JNSK                          00254500
ARM10     ADVANCE    P19                            00254600
          ASSIGN     26,0                           00254700
          ASSIGN     4+,P19                         00254800
          SAVEVALUE  109+,P19                       00254900
          TRANSFER   ,ARM15                         00255000
JNSC      ASSIGN     7,V27                          00255100
          ASSIGN     20,V59                         00255200
          ASSIGN     9,K0                           00255300
          TRANSFER   ,JNSS                          00255400
JNSP      ASSIGN     23,PN7                         00255500
          ASSIGN     21,SJNSE                       00255600
          LINK       P7,P23                         00255700
JNSF      ASSIGN     19,V59                         00255800
          ASSIGN     0,P25                          00255900
          ASSIGN     26,K1                          00256000
```

209

74   Cards 2607 through 2608 have been modified in the manner
previously discussed to ensure against improper activation of
the PMI and PMP logic and also to generalize the test for PMP
and PMI activation.

```
        TEST E        P8,K9,UNSG                              00256100
        DEPART        V27                                     00256200
        DEPART        25                                      00256300
        PRIORITY      1,BUFFER                                00256400
        TEST NE       P12,K1,ARR11                            00256400
        PRIORITY      60                                      00256600
JNSH    ASSIGN        8,P18                                   00256700
        ASSIGN        26,K0                                   00256800
        TEST NE       V35,5,ARR59                             00256900
        TEST E        P8,K0,UNSK                              00257000
        TRANSFER      ,JNSP                                   00257100
ARR11   PRIORITY      0                                       00257200
        TRANSFER      ,UNSH                                   00257300
ARR57   MSAVEVALUE    5+,V46,P6,V36                           00257400
        TRANSFER      ,ARR55                                  00257500
ARR59   QUEUE         V27                                     00257600
        QUEUE         25                                      00257700
        GATE LS       20                                      00257800
        DEPART        V27                                     00257900
        DEPART        25                                      00258000
        TRANSFER      ,JNSH                                   00258100
*                                                             00258200
*   AIRCRAFT RELEASE AND REASSEMBLY SUBROUTINE                00258300
*                                                             00258400
ARRA    GATHER        P26                                     00258500
        PRIORITY      90,BUFFER                               00258600
        TEST NE       P20,K123,ARRB                           00258700
        TEST NE       P8,K0,ARRB                              00258800
        TEST E        PN64,1,ARRB                             00258900
        TRANSFER      ,533,ARRB,ARRH                          00259000
ARRH    LOGICS        21                                      00259100
ARRB    ASSEMBLE      P26                                     00259200
ARRJ    MATCH         SP,ARR3                                 00259300
        ASSIGN        19,K0                                   00259400
        ASSIGN        26,K0                                   00259500
        ASSIGN        20,K0                                   00259600
        ASSIGN        25,K0                                   00259700
        ASSIGN        16,K0                                   00259800
ARRC    TABULATE      9                                       00259900
        SAVEVALUE     188+,V60                                00260000
        TEST E        P27,K1,ARRD                             00260100
        ASSIGN        27,K0                                   00260200
        TRANSFER      ,ARRE                                   00260300
ARRD    GATE LS       21,ARRF                                 00260400
ARRE    LOGICR        21                                      00260500
        TEST NE       P35,999,ARRG                            00260600
        TEST L        V187,V234,ARR17   GENERAL               00260700
        TEST L        V11,V236,ARR17        TEST FOR CALENDAR PHP  00260710
        TEST L        V148,V235,ARR19   GENERAL               00260800
ARRG    ASSIGN        17,2                                    00260900
        MARK          84                                      00261000
        ASSIGN        5,K0                                    00261100
```

211

75   Card 2619 has been added to allow model activation with-
out a daily inspection.

76   Card 2637 has been added to prevent off-shift maintenance.

77   Cards 2638 and 2639 have been added to provide accounting
of NORS delay time.

```
        TRANSFER    932,'T4,5                                           00261200
        TEST LE     V13,FV2,AARH                                        00261300
        ASSIGN      35,0                                                00261400
        TRANSFER    ,TST4P                                              00261500
AARF    GATE LR     1,AA9                                               00261600
        TEST NE     P17,K15,AA9                                         00261700
        TEST E      3V11,K1,AA8                                         00261800
75      TEST GE     KX1(1,3),K1,AA9   GENERAL                          00261900
        TRANSFER    ,JL9                                                00262000
AAR4    ASSIGN      27,K1                                               00262100
        ASSIGN      13,2                                                00262200
        TRANSFER    ,CA4                                                00262300
*                                                                       00262400
*                                                                       00262500
*                                                                       00262600
*                                                                       00262700
* NORS/CANNIBALIZATION ROUTINE                                          00262800
*                                                                       00262900
VORCA   TEST NE     KX1(3,7),K1,VORA                                    00263000
        ASSIGN      1,V61                                               00263100
VORV    TEST LE     3V5,FV69,VORCB                                      00263200
        TABULATE    13                                                  00263300
        ASSIGN      19,K1                                               00263400
        SPLIT       1,RLARF,,25                                         00263500
        ADVANCE     P1                                                  00263600
76      TEST E      3V13,K1   TEST FOR PREVENTING OFF SHIFT MAINT.      00263700
77      SAVEVALUE   V2329,K1                                            00263800
        SAVEVALUE   10256,K1                                            00263900
        SPLIT       1,RLAR3,,25                                         00264000
        TRANSFER    ,HRAA                                               00264100
VORCB   SPLIT       1,VORCC                                             00264200
        TRANSFER    ,VORCE                                              00264300
VORCC   ADVANCE     P1                                                  00264400
        TRANSFER    ,CAND                                               00264500
VORA    ASSIGN      23,70                                               00264600
        TEST E      V52,C429                                            00264700
        TEST E      48V33,,K0                                           00264800
        ASSIGN      1,K0                                                00264900
        GATE LR     22,VORC                                             00265000
        GATE LR     23                                                  00265100
        SCAN        12,19,P14,,,VORH                                    00265200
        SPLIT       1,VORT,,60                                          00265300
        SPLIT       1,VORS,,60                                          00265400
        SPLIT       1,RLARF,,50                                         00265500
        TRANSFER    ,VORT                                               00265600
CAND    ASSIGN      17,K22                                              00265700
        TRANSFER    ,CAND                                               00265800
VORT    UNLINK      29,VORL,1,14,P13                                    00265900
VORS    PRIORITY    113                                                00266000
VORV    JOIN        11                                                  00266100
VORH    LINK        23,FIFO                                             00266200
VORH    LOGICS      23                                                  00266300
        TEST E      48V33,,K0                                           00266400
VORE    UNLINK      29,CANA,1,,,VORE                                    00266500
        SAVEVALUE   75,K9,H                                             00266600
        SAVEVALUE   A29,P22,H                                           00266700
```

213

```
        GATE LS    24                              00266900
        LOGIC R    24                              00266900
        TEST E     X475,K0,VJR4                    00267000
        ASSIGN     1,X475                          00267100
        JNLINK     23,CANR,1,13,R1                 00267200
        BUFFER                                     00267300
VJRCF   TABULATE   11                              00267400
        MSAVEVALUE 54,V35,2,K1,H                   00267500
        LOGIC R    23                              00267600
        ASSIGN     13,K13                          00267700
        TABULATE   5                               00267800
        ASSIGN     1,K5031                         00267900
CANP    ASSIGN     3,V50                           00268000
        ASSIGN     2,V51                           00268100
        ASSIGN     0,V55                           00268200
        TEST L     P3,K5,CANE                       00268300
        ASSIGN     4,K5                             00268400
CANE    QUEUE      V27                             00268500
        QUEUE      44                              00268600
CANH    GATE LR    20,CANF                         00268700
        ASSIGN     7,V34                           00268800
        ASSIGN     20,V35                           00268900
        ASSIGN     5,K1                             00269000
CANG    TEST GE    P07,P3,CANJ                      00269100
        TEST LE    P3,P30,CANL                      00269200
CANK    DEPART     V27                             00269300
        DEPART     44                              00269400
        ENTER      47,P3                            00269500
        ADVANCE    P3                              00269600
        LEAVE      47,P3                            00269700
        JNLINK     37,JNLK,ALL                     00269800
        ASSIGN     17,P3                            00269900
        MSAVEVALUE 24,P3,P17,V35                    00270000
        SAVEVALUE  V55+,V36                         00270100
        SAVEVALUE  51+,V35                          00270200
        MSAVEVALUE 54,V35,2,V36                     00270300
        TEST E     P26,K0,CANM                      00270400
        TEST E     P1,K5031,CANN                     00270500
        TRANSFER   ,MP44                           00270600
VJRS    ASSIGN     19,K1                            00270700
        TABULATE   13                              00270800
        LINK       30,FIFO                         00270900
VJRC    LOGIC R    22                              00271000
VJRD    TABULATE   13                              00271100
        SPLIT      1,VJRS,,60                       00271200
        SPLIT      1,RLARF,,50                      00271300
        SPLIT      1,VJRJ,,60                       00271400
        ASSIGN     19,K1                            00271500
VJRL    PRIORITY   13,BUFFER                        00271600
        ASSIGN     2,MX2(1 P14)                     00271700
        JOIN       12                              00271800
VJRF    LINK       29,P3                            00271900
VJRE    LOGIC R    23                              00272000
        BUFFER                                     00272100
```

214

78   Card 2774 has been added to prevent off-shift maintenance.

```
          TRANSFER     ,NJRJ
CAVB      SPLIT        1,NJRV,,60          00272200
          ASSIGN       22,X4423            00272300
          SPLIT        1,NJRV,,60          00272400
NJRJ      PRIORITY     50                  00272500
          ASSIGN       1,V61               00272600
          ASSIGN       3,V68               00272700
          TEST G       P3,VX8(1,P14),NJRK  00272800
          SAVEVALUE    8,1,X18,X3          00272900
NJRK      ADVANCE      P1                  00273000
          ASSIGN       19,X15              00273100
          TABULATE     6                   00273200
          TABULATE     17                  00273300
          GATE LR      25                  00273400
          TEST E       V62,X428            00273500
          LOGICS       25                  00273600
          SAVEVALUE    62,P22              00273700
          JOINLINK     28,NJRP,ALL         00273800
          GATE LR      25                  00273900
          GATE LS      25,CAVD             00274000
          LOGICR       26                  00274100
CAVN      TERMINATE                        00274200
CAVC      LOGICS       28                  00274300
          TEST E       P22,X4423,NJR4      00274400
          SAVEVALUE    75,X1,H             00274500
          TRANSFER     ,NJR4               00274600
NJRJ      JOIN         10                  00274700
          GATE LR      27                  00274800
          GATE LS      28,NJRR             00274900
          TEST E       P22,X52,NJRR        00275000
          LOGICR       29                  00275100
          TERMINATE                        00275200
NJRR      REMOVE       10                  00275300
          PRIORITY     110                 00275400
          TRANSFER     ,NJR4               00275500
CAV4      ASSIGN       29,X4423            00275600
          JOINLINK     29,CANC,ALL,13,P14  00275700
          SAVEVALUE    76,P14,H            00275800
          PRIORITY     110,BUFFER          00275900
          GATE LR      23                  00276000
          TRANSFER     ,NJR4               00276100
NJRP      GATE LS      25,NJRP             00276200
          LOGICS       27                  00276300
          JOINLINK     29,NJRJ,ALL,13,P14  00276400
          BUFFER                           00276500
          SCAN         10,22,X62,,,NJRJ    00276600
          LOGICS       28                  00276700
          LOGICS       27                  00276800
          LOGICS       25                  00276900
          TEST E       X10,X1,NJRF         00277000
          ASSIGN       22,X42              00277100
NJR4      LOGICS       25                  00277200
          TEST E       BV19,X1   TEST FOR PREVENTING OFF SHIFT MAINT.   00277300
          SAVEVALUE    636,H1              00277400
                                           00277500
```

79   Cards 2776 and 2777 have been added to account for NORS times by aircraft and platoon.

```
⑦⑨          SAVEVALUE    V2326,M1              THESE SAVEVALUES SHOULD ACCOUNT    00277400
            SAVEVALUE    10236,M1              FOR N739 BY A/C & CO.             00277700
            UNLINK       30,N739,ALL,13,210                                     00277800
            REMOVE       13                                                     00277900
N39X  SPLIT        1,ALARG                                                00278000
            TRANSFER     ,N39A                                                 00278100
N39J  LOGIC R      27                                                    00278200
            GATE LR      25                                                     00278300
            TRANSFER     ,N39F                                                 00278400
CANF  ASSIGN       7,V27                                                  00278500
            ASSIGN       20,V39                                                00278600
            ASSIGN       9,K0                                                  00278700
            TRANSFER     ,CANG                                                 00278800
CANJ  ASSIGN       23,PN7                                                 00278900
            ASSIGN       21,SCANH                                             00279000
            LINK         P7,P33                                               00279100
CANL  ASSIGN       19,V39                                                 00279200
            ASSIGN       8,P20                                               00279300
            ASSIGN       26,K1                                                00279400
            TEST E       P3,K0,CANK                                          00279500
            DEPART       V27                                                  00279600
            DEPART       44                                                   00279700
            PRIORITY     1,BUFFER                                            00279800
            PRIORITY     99                                                   00279900
CANM  ASSIGN       8,P19                                                 00280000
            ASSIGN       26,K0                                               00280100
            TRANSFER     ,CANP                                               00280200
.                                                                             00280300
.                                                                             00280400
.                                                                             00280500
.                                                                             00280600
* SERVICE PLATOON, DIRECT SUPPORT, GENERAL SUPPORT COMP REPAIR                00280700
*                                                                             00280800
TMAH  ASSIGN       6,K6                                                  00280900
            TRANSFER     ,TMA3                                               00281000
TMAA  ASSIGN       8,V65                                                 00281100
            TABULATE     13                                                  00281200
            TABULATE     18                                                  00281300
            TEST LE      V139,PN1,ARM6                                      00281400
            TEST LE      V100,PN1,ARM7                                      00281500
            TEST NE      V65,K0,TMAH                                       00281600
            TEST L       P8,K6,TMA3                                        00281700
```

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```
        ASSIGN      4,K5                                        00291800
TN4B    QUEUE       K5                                          00291900
TN4C    GATE SNF    FN83,TN4D                                   00292000
        DEPART      K5                                          00292100
        ENTER       FN83                                        00292200
        ASSIGN      32,V47                                      00292300
        QUEUE       V69                                         00292400
TN4F    TEST GE     R*32,P31,TN4E                               00292500
        DEPART      V69                                         00292600
        ENTER       *32,P31                                     00292700
        SAVEVALUE   V69+,V70                                    00292800
        SAVEVALUE   75+,V70                                     00292900
        ADVANCE     P8                                          00293000
        LEAVE       FN83                                        00293100
        LEAVE       *32,P31                                     00293200
        JNLINK      31,TN4C,ALL                                 00293300
        JNLINK      55,TN4F,ALL,32,P32                          00293400
        ASSIGN      5,K3                                        00293500
        SAVEVALUE   77,PV7,4                                    00293600
        TEST L      X+77,V71,ARM45                              00293700
        ASSIGN      6+,K3                                       00293800
        TEST G      X+77,V72,ARM45                              00293900
        ASSIGN      4+,K2                                       00294000
        TEST G      X+77,V73,ARM47                              00294100
        ASSIGN      5+,K1                                       00294200
        SAVEVALUE   192+,K1                                     00294300
TN4G    MSAVEVALUE  5+,V35,*6,K1,4                              00294400
        MSAVEVALUE  5+,V35,*6,V70                               00294500
        SAVEVALUE   V173+,V70                                   00294600
        SAVEVALUE   650+,V70                                    00294700
        SAVEVALUE   V192+,V70                                   00294800
        SAVEVALUE   1250+,V70                                   00294900
        TEST E      P6,K4,ARG2                                  00295000
DEPA    TABULATE    15                                          00295100
        TERMINATE                                               00295200
ARM45   SAVEVALUE   172+,K1                                     00295300
        TRANSFER    ,TN4G                                       00295400
ARM46   SAVEVALUE   192+,K1                                     00295500
        TRANSFER    ,ARM45                                      00295600
ARM47   SAVEVALUE   191+,K1                                     00295700
        TRANSFER    ,ARM45                                      00295800
ARM6    ASSIGN      12,1                                        00295900
        PRIORITY    0                                           00296000
        ASSIGN      29,P31                                      00296100
        ASSIGN      30,K0                                       00296200
        TEST E      P29,K5,ARM9                                 00296300
        ASSIGN      26,K2                                       00296400
ARM7    ASSIGN      27,0                                        00296500
        ASSIGN      17,19                                       00296600
        ASSIGN      6,7                                         00296700
        SAVEVALUE   117+,K1                                     00296800
        MSAVEVALUE  5+,V35,*6,K1,4                              00296900
        TRANSFER    ,JN9T                                       00297000
ARM8    ASSIGN      26,3                                        00297100
```

80   Cards 2888 and 2889 have been modified to allow for up
to 24 TBO components.

```
         TRANSFER    ,ARM0                        00247200
TMA0     LINK        31,PTFD                      00247300
TMAE     LINK        55,PTFD                      00297400
ARM7     ASSIGN      32,V141                      00247500
         QUEUE       V142                         00287600
ARM13    TEST GE     R*32,P31,ARM12               00247700
         DEPART      V142                         00297800
         ENTER       *32,P31                      00247900
         SAVEVALUE   V103+,V70                    00248000
         SAVEVALUE   107+,V70                     00288100
         ADVANCE     P4                           00248200
         LEAVE       *32,P31                      00248300
         JOINLINK    57,ARM13,ALL,32,P32          00289400
         ASSIGN      6,9                          00298500
         SAVEVALUE   179+,K1                      00298600
         TRANSFER    ,TMA0                        00288700
ARM12    LINK        57,PTFD                      00249800
ARM26    ASSIGN      12,P0                        00298900
ARM27    TEST NE     P22,M46(27,*12),ARM28        00259000
         LOOP        12,ARM27                     00249100
         TRANSFER    ,TMA0                        00249200
ARM29    SPLIT       1,ARM29,,N0                  00259300
         TRANSFER    ,TMA0                        00249400
ARM28    TEST E      P6,M46(28,*12),SMG0          00259500
         MSAVEVALUE  6,*10,*12,V150,H             00249600
         TERMINATE                                00249700
*                                                 00249800
*                                                 00249900
*                                                 00290000
*                                                 00290100
*  MANPOWER CONTROL ROUTINE                       00290200
*                                                 00290300
*                                                 00290400
*    SHIFT TERMINATION SUBROUTINE                 00290500
*                                                 00290600
MPCA     PRIORITY    100                          00290700
         SPLIT       1,MPCE,,25                   00290800
         SPLIT       3,MPCB,2,25                  00290900
MPCB     ASSIGN      3,MXX(*2,7)                  00291000
         TEST GE     P3,K1,SMG0                   00291100
         ASSIGN      5,MXX(*2,3)                  00291200
         ADVANCE     V70                          00291300
MPCN     ASSIGN      1,K31                        00291400
         SPLIT       22,MPCX,1,25                 00291500
MPCC     LOGIC R     29                           00291600
         SPLIT       1,MPCD,,25                   00291700
         ADVANCE     P5                           00291800
         JOINLINK    54,SMG0,1,13                 00291900
         JOINLINK    56,MPCF,1,13,,MPCG           00292000
         ADVANCE     P3                           00292100
         TRANSFER    ,MPCC                        00292200
MPCX     TEST L      R*1,K900,SMG0                00292300
```

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```
         TEST E      9+1,<1,MPCJA                                  00202400
MPCL     ASSIGN      11,901                                        00202500
         ENTER       61,911                                        00202600
         GATE LR     99                                            00202700
         LEAVE       61,911                                        00202800
         T INITIATE                                                00202900
MPCK     ASSIGN      15,V75                                        00203000
         ASSIGN      9,215                                         00203100
MPCJB    SPLIT       1,MPCL,,25                                    00203200
         ASSIGN      21,S+PCM                                      00203300
         ASSIGN      23,<1                                         00203400
         LINK        61,P23                                        00203500
MPCD     LINK        56,FIFO                                       00203600
MPCF     TRANSFER    ,MPCD                                         00203700
MPCM     TEST E      P9,R+1,MPCK                                   00203800
         TRANSFER    ,MPCL                                         00203900
MPCG     LOGICR      29                                            00204000
         ADVANCE     P5                                            00204100
         UNLINK      56,MPCF,1,13,,MPCM                            00204200
         TRANSFER    ,MPCC                                         00204300
MPCJA    ASSIGN      9,9+1                                         00204400
         TRANSFER    ,MPCJB                                        00204500
*                                                                  00204600
*                                                                  00204700
*   SHIFT CHANGE SUBROUTINE                                        00204800
*                                                                  00204900
MPCE     ASSIGN      3,MX5(1,1)                                    00205000
         ASSIGN      2,MX5(2,1)                                    00205100
         ADVANCE     MX5(1,4)                                      00205200
MPCJ     LOGICI      20                                            00205300
         GATE LR     30,MPCAA                                      00205400
         LOGICI      30                                            00205500
         ASSIGN      4,11                                          00205600
MPCA9    UNLINK      V77,INLK,ALL                                  00205700
         LOOP        4,MPCA9                                       00205800
MPCA0    ADVANCE     P5                                            00205900
         TRANSFER    ,MPCI                                         00206000
MPCAA    LOGICI      30                                            00206100
         ASSIGN      4,11                                          00206200
MPCAC    UNLINK      V79,INLK,ALL                                  00206300
         LOOP        4,MPCAC                                       00206400
         ADVANCE     P2                                            00206500
         ADVANCE     V105                                          00206600
         TRANSFER    ,MPCI                                         00206700
*                                                                  00206800
*                                                                  00206900
*  DATA COMPILATION ROUTINE                                        00207000
DCRZ     ADVANCE     <2                                            00207100
DCRA     ASSIGN      3,MX1(5,1)                                    00207200
         PRIORITY    1,BUFFER                                      00207300
         ADVANCE     V9                                            00207400
         MSAVEVALUE  1,6,11,V80                                    00207500
         ASSIGN      5,11                                          00207600
A2M35    ASSIGN      1,V179                                        00207700
         ASSIGN      2,V179                                        00207800
```

81   Cards 2990 and 2991 have been revised to define new save values as a result of increasing the platoon size to 24 aircraft.

82   Card 2994 has been modified to allow for 24 TBO components.

83   Cards 2998 and 3002 have been added to account for NORS times.

84   Cards 3008, 3012, and 3023 have been modified, due to the save value changes generated by increasing the model size to 24 aircraft.

```
           ASSIGN      3,V190                                              00207900
           ASSIGN      4,V191                                              00208000
           SAVEVALUE   V177+,V192                                          00208100
           SAVEVALUE   V198+,V182                                          00208200
           LOOP        5,AR435                                             00208300
           SAVEVALUE   550+,V193                                           00208400
           SAVEVALUE   1150+,V183                                          00208500
           ASSIGN      6,K1                                                00208600
           ASSIGN      1,524                                               00208700
           ASSIGN      2,551                                               00208800
           ASSIGN      3,251                                               00208900
     81 ── ASSIGN      4,775                                               00209000
     └──── ASSIGN      5,1451                                              00209100
    AR446  ASSIGN      7,V212                                              00209200
           SAVEVALUE   V193,V213                                           00209300
     82 ── TEST E      P6,K191,AR443                                       00209400
           SAVEVALUE   650,V214                                            00209500
           SAVEVALUE   193+,V215                                           00209600
           ASSIGN      2,499                                               00209700
     83 ── ASSIGN      3,1424      ESTABLISH SAVEVALUE NOS. FOR NORS /AVAIL. 00209800
           ASSIGN      1,574                                               00209900
    AR443  SAVEVALUE   +2,V216                                            00300000
           ASSIGN      2+,K1                                               00300100
     83 ── ASSIGN      3+,K1       SET UP SAVE NOS FOR NORS TO CALC. AVAIL  00300200
           TEST NE     P1,651,AR449                                        00300300
           LOOP        1,AR449                                             00300400
           TERMINATE                                                       00300500
    AR449  SAVEVALUE   700,V217                                           00300600
           ASSIGN      1,226                                               00300700
     84 ── ASSIGN      2,1426                                              00300800
           ASSIGN      3,201                                               00300900
           ASSIGN      4,701                                               00301000
    AR450  SAVEVALUE   +4,V219                                            00301100
     84 ── TEST NE     P4,726,AR451                                        00301200
           ASSIGN      1+,1                                                00301300
           ASSIGN      2+,1                                                00301400
           ASSIGN      3+,1                                                00301500
           ASSIGN      4+,1                                                00301600
           TRANSFER    ,AR450                                             00301700
    AR451  SAVEVALUE   725,V220                                           00301800
           ASSIGN      1,226                                               00301900
           ASSIGN      2,201                                               00302000
           ASSIGN      3,726                                               00302100
    AR452  SAVEVALUE   +3,V218                                            00302200
     84 ── TEST NE     P3,750,AR453                                        00302300
           ASSIGN      1+,1                                                00302400
           ASSIGN      2+,1                                                00302500
           ASSIGN      3+,1                                                00302600
           TRANSFER    ,AR452                                             00302700
    AR453  SAVEVALUE   750,V221                                           00302800
```

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```
         ASSIGN     2,K11                                      00302000
  DCAA   ASSIGN     3,MX1(6,P2)                                00303000
         TEST GE    P3,K1,DCAC                                 00303100
         ASSIGN     17,25                                      00303200
         MSAVEVALUE 2+,P3,P17,P3                               00303300
         SAVEVALUE  24+,P3                                     00303400
         SAVEVALUE  V30+,P3                                    00303500
  DCAC   LOOP       2,DCAA                                     00303600
         TEST E     MX1(5,8),K0,DCAE                           00303700
  DCAD   ASSIGN     2,25                                       00303800
*                   REMOVE FOR SNAP RUNS                       00303900
  DCAE   BUFFER                                                00304000
         ASSIGN     2,25                                       00304100
  DCAB   ASSIGN     3,K10                                      00304200
  DCAF   ASSIGN     5,MX2(P3,P2)                               00304300
         MSAVEVALUE 2+,15,P2,P5                                00304400
         LOOP       3,DCAF                                     00304500
         LOOP       2,DCAB                                     00304600
  RFFD   TRANSFER   ,RFFA                                      00304700
  ARMBB  ASSIGN     1+,K1                                      00304800
         ASSIGN     2+,K1                                      00304900
         ASSIGN     3+,K1                                      00305000
         ASSIGN     4+,K1                                      00305100
         ASSIGN     5+,K1                                      00305200
         ASSIGN     6+,K1                                      00305300
         TRANSFER   ,ARMBB                                     00305400
  RFFA   SAVEVALUE  195,V229                                   00305500
         SAVEVALUE  196,V230                                   00305600
         SPLIT      1,DCAZ                                     00305610
         BUFFER                                                00305611
         TERMINATE  1                                          00305700
  RFAA   ASSIGN     2,K3                                       00305800
         ASSIGN     3,MX1(5,7)                                 00305900
         MSAVEVALUE 2+,0,17,P3                                 00306000
         SAVEVALUE  V37+,P3                                    00306100
         SAVEVALUE  32+,P3                                     00306200
  RFFG   SAVEVALUE  90+,K1                                     00306300
         SAVEVALUE  197+,K1                                    00306400
         SAVEVALUE  V195+,K1                                   00306500
         SAVEVALUE  600+,K1                                    00306600
         SAVEVALUE  V196+,K1                                   00306700
         SAVEVALUE  1200+,K1                                   00306800
         SAVEVALUE  V195+,K1                                   00306900
         SAVEVALUE  675+,K1                                    00307000
         SAVEVALUE  V194+,K1                                   00307100
         SAVEVALUE  1275+,K1                                   00307200
         TERMINATE                                             00307300
  RFAB   TABULATE   9                                          00307400
         SAVEVALUE  35+,K1                                     00307500
         SAVEVALUE  53+,K1                                     00307600
         TERMINATE                                             00307700
  DACB   TERMINATE                                             00307800
  DATA   PRIORITY   0                                          00307900
```

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85   The START card has been modified to suppress the output
of the GPSS chains and give 5 intermediate outputs.

This card should be tailored to the specific needs of the
analyst by referring to the IBM GPSS manual.

86   The output editor has been modified to contain the base-
line CH-47 mission and maintenance concept narrative.

Also, the output editor has been modified to accommodate a
platoon size of 24 aircraft.

```
              ADVANCE     K60                                        00309000
      DATA1   ASSIGN      2,K8                                       00309100
      DATA2   ADVANCE     250                                        00309200
              TEST E      V224,K0,DATA6                              00309300
      DATA3   ADVANCE     K10                                        00309400
              LOOP        2,DATA2                                    00309500
              ADVANCE     K710                                       00309600
              TEST E      V224,K0,DATA6                              00309700
      DATA5   ADVANCE     K10                                        00309800
              TRANSFER    ,DATA1                                     00309900
      DATA4   SAVEVALUE   199-,V225                                  00309000
              SAVEVALUE   197-,V227                                  00309100
              TRANSFER    ,DATA3                                     00309200
      DATA6   SAVEVALUE   199-,V226                                  00309300
              SAVEVALUE   197-,V228                                  00309400
              TRANSFER    ,DATA5                                     00309500
              LAST                                                   00309600
(85)─────     START       5,,1                                       00309700
              REPORT                                                 00309800
              EJECT                                                  00309900
              SPACE       3                                          00310000
(86)-57 TEXT             ARMY R & M SIMULATION MODEL                 00310100
    57  TEXT             --------------------------                  00310200
              SPACE       2                                          00310300
    2   TEXT             SCENARIO SIMULATED                          00310400
              SPACE       1                                          00310500
    8   TEXT             ONE PLATOON OF SIXTEEN ARMY HELICOPTERS     00310600
              SPACE       1                                          00310700
    8   TEXT             FLYING PROGRAM CONSISTED OF SEVEN FLYING DAYS PERWEEK*00310800
WITH EACH SIMULATION INTERVAL COVERING A FOUR WEEK PERIOD.          00310900
              SPACE       1                                          00311000
    8   TEXT             MISSION LENGTH IS 1.5 HOURS WITH A DEMAND OF   50  FLY*00311100
ING HOURS PER AIRCRAFT FOR THE FOUR WEEK PERIOD.                    00311200
              SPACE       1                                          00311300
    8   TEXT             LAUNCH SCHEDULE DURING EACH FLYING DAY      00311400
    5   TEXT             0700        3 AIRCRAFT       0830     3 AIRCRAFT 00311500
    5   TEXT             1000        3 AIRCRAFT       1130     3 AIRCRAFT 00311600
    5   TEXT             1300        3 AIRCRAFT       1430     3 AIRCRAFT 00311700
    5   TEXT             1600        3 AIRCRAFT       1730     3 AIRCRAFT 00311800
    5   TEXT             1900        3 AIRCRAFT                       00311900
              SPACE       1                                          00312000
    8   TEXT             OTHER FLIGHT CONSIDERATIONS                 00312100
    5   TEXT             STANDBY AIRCRAFT READY AT ALL TIMES*        00312200
DURING THE SCHEDULED FLYING INTERVALS.                             00312300
    6   TEXT             MISSION FLIGHT IS POSSIBLE UP TO THIRTY MINUTES AFTER*00312400
SCHEDULED FLIGHT TIME. AFTER THIS INTERVAL, FLIGHT IS SCRUBBED.    00312500
              SPACE       2                                          00312600
    2   TEXT             MAINTENANCE CONCEPT SIMULATED               00312700
              SPACE       1                                          00312800
    8   TEXT             PERIODIC MAINTENANCE INSPECTIONS*           00312900
OCCUR EVERY 100 FLYING HOURS                                       00313000
              SPACE       1                                          00313100
```

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```
8      TEXT                                                            *00313200
                                                                        00313300
       SPACE       1                                                    00313400
8      TEXT          PREVENTIVE MAINTENANCE DAILY (PMD) INSPECTIONS OCCUR *00313500
DAILY IF THE AIRCRAFT WAS FLOWN OR EVERY 72 HOURS IF NOT FLYING.         00313600
       SPACE       1                                                    00313700
8      TEXT          MAINTENANCE PERSONNEL ARE AVAILABLE BETWEEN 0600 AND *00313800
2200 DURING THE SEVEN DAY FLYING PERIOD PER WEEK                         00313900
       SPACE       1                                                    00314000
6      TEXT          THE ONLY EXCEPTION TO THE ABOVE OCCURS WHEN THERE ARE*00314100
NOT SUFFICIENT AIRCRAFT TO MEET THE FIRST MISSION DEMAND OF NEXT DAY     00314200
       SPACE       1                                                    00314300
8      TEXT          THE AIRCRAFT CONSISTS OF 225 ELEMENTS; THERE ARE 16 *00314400
TIME CHANGE COMPONENTS.                                                  00314500
       SPACE       1                                                    00314600
8      TEXT          AN INTERMEDIATE I SPECTION IS PERFORMED EVERY 10     *00314700
FLIGHT HOURS                                                            00314800
       SPACE       1                                                    00314900
8      TEXT          ORGANIZATIONAL MAINTENANCE INCLUDES AN INTEGRATED DIR*00315000
ECT SUPPORT MAINTENANCE CAPABILITY                                       00315100
       SPACE       1                                                    00315200
8      TEXT          OFF EQUIPMENT COMPONENT MAINTENANCE IS PERFORMED     *00315300
AT THE DEPOT LEVEL.                                                      00315400
*                                                                       00315500
       SPACE       1                                                    00315600
8      TEXT        CONDEMNATION OR NRTS STATUS  IS A DUMMY               00315700
       SPACE       1                                                    00315800
9      TEXT        EVALUATION                                            00315900
       SPACE       1                                                    00316000
10     TEXT        BASIC C4-07C MISSION AND MAINTENANCE PHILOSOPHY       00316100
       EJECT                                                            00316200
19     TEXT                     AIRCRAFT MISSION                         00316300
       SPACE       1                                                    00316400
19     TEXT                        INFORMATION                           00316500
*                                                                       00316600
       SPACE       3                                                    00316700
19     TEXT        AIRCRAFT          MISSIONS          MISSIONS          *00316800
   MISSION                                                              00316900
19     TEXT        TAIL NUMBER       CALLED            FLOWN             *00317000
   FLYING HOURS                                                          00317100
       SPACE       3                                                    00317200
19     TEXT           1              *X201.2/XXX*          *X226*00317300
,2/XXX*               *X251,2/1,XXX,X*                                   00317400
*                                                                       00317500
       SPACE       3                                                    00317600
19     TEXT           2              *X202,2/XXX*          *X227*00317700
,2/XXX*               *X252,2/1,XXX,X*                                   00317800
       SPACE       3                                                    00317900
19     TEXT           3              *X203,2/XXX*          *X228*00318000
,2/XXX*               *X253,2/1,XXX,X*                                   00318100
```

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```
        SPACE  3                                                    00319200
19      TEXT              4          @X204,2/XXX@      @X229*00318300
,2/XXX@              @X254,2/1_XXX.X@                               00318400
        SPACE  3                                                    00319500
19      TEXT              5          @X205,2/XXX@      @X230*00319600
,2/XXX@              @X255,2/1_XXX.X@                               00319700
        SPACE  3                                                    00319800
19      TEXT              6          @X206,2/XXX@      @X231*00319900
,2/XXX@              @X256,2/1_XXX.X@                               00319000
        SPACE  3                                                    00319100
19      TEXT              7          @X207,2/XXX@      @X232*00319700
,2/XXX@              @X257,2/1_XXX.X@                               00319300
        SPACE  3                                                    00319400
19      TEXT              8          @X208,2/XXX@      @X233*00319500
,2/XXX@              @X258,2/1_XXX.X@                               00319600
        SPACE  3                                                    00319700
19      TEXT              9          @X209,2/XXX@      @X234*00319800
,2/XXX@              @X259,2/1_XXX.X@                               00319000
        SPACE  3                                                    00320000
19      TEXT              10         @X210,2/XXX@      @X235*00320100
,2/XXX@              @X260,2/1_XXX.X@                               00320200
        SPACE  3                                                    00320300
19      TEXT              11         @X211,2/XXX@      @X236*00320400
,2/XXX@              @X261,2/1_XXX.X@                               00320500
        SPACE  3                                                    00320600
19      TEXT              12        @X212,2/XXX@       @X237*00320700
,2/XXX@              @X262,2/1_XXX..X@                              00320800
        SPACE  3                                                    00320900
19      TEXT              13        @X213,2/XXX@       @X238*00321000
,2/XXX@              @X263,2/1_XXX.X@                               00321100
        SPACE  3                                                    00321200
19      TEXT              14        @X214,2/XXX@       @X239*00321300
,2/XXX@              @X264,2/1_XXX.X@                               00321400
        SPACE  3                                                    00321500
19      TEXT              15        @X215,2/XXX@       @X240*00321600
,2/XXX@              @X265,2/1_XXX.X@                               00321700
        SPACE  3                                                    00321800
19      TEXT              16        @X216,2/XXX@       @X241*00321900
,2/XXX@              @X266,2/1_XXX.X@                               00322000
        SPACE  3                                                    00322100
19      TEXT              17        @X217,2/XXX@       @X242*00322200
,2/XXX@              @X267,2/1_XXX.X@                               00322300
        SPACE  3                                                    00322400
19      TEXT              18        @X218,2/XXX@       @X243*00322500
,2/XXX@              @X268,2/1_XXX.X@                               00322600
        SPACE  3                                                    00322700
19      TEXT              19        @X219,2/XXX@       @X244*00322800
,2/XXX@              @X269,2/1_XXX.X@                               00322900
        SPACE  3                                                    00323000
19      TEXT              20        @X220,2/XXX@       @X245*00323100
,2/XXX@              @X270,2/1_XXX.X@                               00323200
        SPACE  3                                                    00323300
19      TEXT              21        @X221,2/XXX@       @X246*00323400
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,2/XXX#             #X271,2/1_XXX,X#                                    00323500
        SPACE    3        .                                            00323600
  13    TEXT              22          #X222,2/XXX#             #X247#00323700
,2/XXX#             #X272,2/1_XXX,X#                                    00323800
        SPACE    3                                                     00323900
  13    TEXT              23          #X223,2/XXX#             #X248#00324000
,2/XXX#             #X273,2/1_XXX,X#                                    00324100
        SPACE    3                                                     00324200
  13    TEXT              24          #X224,2/XXX#             #X249#00324300
,2/XXX#             #X274,2/1_XXX,X#                                    00324400
  13    TEXT              ........................................#00324500
..............................................                         00324600
        SPACE    2                                                     00324700
  13    TEXT     MONTHLY TOTALS      #X225,2/XXX#             #X250#00324800
,2/XXX#             #X275,2/1_XXX,X#                                    00324900
        EJECT                                                          00325000
  13    TEXT                    MONTHLY SCHEDULED                      00325100
        SPACE    1                                                     00325200
  13    TEXT                 INSPECTION INFORMATION                    00325300
  #                      ..............................               00325400
        SPACE    3                                                     00325500
  #     TEXT     AIRCRAFT    PREFLIGHT       PREFLIGHT      DAILY    #00325600
    DAILY        PMT           PMP            PMP           PMP    00325700
  #     TEXT     TAIL        NUMBER OF       MAINT.      NUMBER OF #00325800
    MAINT.       NUMBER OF      MAINT         NUMBER OF     MAINT   00325900
  #     TEXT     NUMBER      INSPECTION      MAN HRS.    INSPECTION#00326000
    MAN HRS.     INSPECTION     MAN HRS.      INSPECTION    MAN HR 00326100
        SPACE    3                                                     00326200
  3     TEXT              1          #X276,2/XXX#         #X301,2/2LXXX,X#00326300
X#         #X326,2/XXX#             #X351,2/2LXXX,XX#                    00326400
  79    TEXT     #X376,2/XXX#            #X001,2/2LXXX,XX#         #X#00326500
#26,2/XXX#         #X051,2/2LXXX,XX#                                    00326600
        SPACE    3                                                     00326700
  3     TEXT              2          #X277,2/XXX#         #X302,2/2LXXX,X#00326800
X#         #X327,2/XXX#             #X352,2/2LXCCC,XX#                   00326900
  79    TEXT     #X377,2/XXX#            #X002,2/2LXXX,XX#         #X#00327000
#27,2/XXX#         #X052,2/2LXXX,XX#                                    00327100
        SPACE    3                                                     00327200
  3     TEXT              3          #X278,2/XXX#         #X303,2/2LXXX,X#00327300
X#         #X328,2/XXX#             #X353,2/2LXXX,XX#                    00327400
  79    TEXT     #X378,2/XXX#            #X003,2/2LXXX,XX#         #X#00327500
#28,2/XXX#         #X053,2/2LXXX,XX#                                    00327600
        SPACE    3                                                     00327700
  3     TEXT              4          #X279,2/XXX#         #X304,2/2LXXX,X#00327800
X#         #X329,2/XXX#             #X354,2/2LXXX,XX#                    00327900
  79    TEXT     #X379,2/XXX#            #X004,2/2LXXX,XX#         #X#00328000
#29,2/XXX#         #X054,2/2LXXX,XX#                                    00328100
        SPACE    3                                                     00328200
  3     TEXT              5          #X280,2/XXX#         #X305,2/2LXXX,X#00328300
X#         #X330,2/XXX#             #X355,2/2LXXX,XX#                    00328400
  79    TEXT     #X380,2/XXX#            #X005,2/2LXXX,XX#         #X#00328500
#30,2/XXX#         #X055,2/2LXXX,XX#                                    00328600
        SPACE    3                                                     00328700
```

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 5    TEXT       6              *X281,2/XXX*          *X306,2/2LXXX,X*00328800
X*         *X331,2/XXX*              *X356,2/2LXXX,XX*              00328900
 79   TEXT     *X381,2/XXX*         *X406,2/2LXXX,XX*              *X*00329000
431,2/XXX*        *X856,2/2LXXX,XX*                                00329100
      SPACE      3                                                00329200
 5    TEXT       7              *X282,2/XXX*          *X307,2/2LXXX,X*00329300
X*         *X332,2/XXX*              *X357,2/2LXXX,XX*              00329400
 79   TEXT     *X382,2/XXX*         *X407,2/2LXXX,XX*              *X*00329500
432,2/XXX*        *X857,2/2LXXX,XX*                                00329600
      SPACE      3                                                00329700
 5    TEXT       8              *X283,2/XXX*          *X308,2/2LXXX,X*00329800
X*         *X333,2/XXX*              *X358,2/2LXXX,XX*              00329900
 79   TEXT     *X383,2/XXX*         *X408,2/2LXXX,XX*              *X*00330000
433,2/XXX*        *X858,2/2LXXX,XX*                                00330100
      SPACE      3                                                00330200
 5    TEXT       9              *X284,2/XXX*          *X309,2/2LXXX,X*00330300
X*         *X334,2/XXX*              *X359,2/2LXXX,XX*              00330400
 79   TEXT     *X384,2/XXX*         *X409,2/2LXXX,XX*              *X*00330500
434,2/XXX*        *X859,2/2LXXX,XX*                                00330600
      SPACE      3                                                00330700
 5    TEXT      10              *X285,2/XXX*          *X310,2/2LXXX,X*00330800
X*         *X335,2/XXX*              *X360,2/2LXXX,XX*              00330900
 79   TEXT     *X385,2/XXX*         *X410,2/2LXXX,XX*              *X*00331000
435,2/XXX*        *X860,2/2LXXX,XX*                                00331100
      SPACE      3                                                00331200
 5    TEXT      11              *X286,2/XXX*          *X311,2/2LXXX,X*00331300
X*         *X336,2/XXX*              *X361,2/2LXXX,XX*              00331400
 79   TEXT     *X386,2/XXX*         *X411,2/2LXXX,XX*              *X*00331500
436,2/XXX*        *X861,2/2LXXX,XX*                                00331600
      SPACE      3                                                00331700
 5    TEXT      12              *X287,2/XXX*          *X312,2/2LXXX,X*00331800
X*         *X337,2/XXX*              *X362,2/2LXXX,XX*              00331900
 79   TEXT     *X387,2/XXX*         *X412,2/2LXXX,XX*              *X*00332000
437,2/XXX*        *X862,2/2LXXX,XX*                                00332100
      SPACE      3                                                00332200
 5    TEXT      13              *X288,2/XXX*          *X313,2/2LXXX,X*00332300
X*         *X338,2/XXX*              *X363,2/2LXXX,XX*              00332400
 79   TEXT     *X388,2/XXX*         *X413,2/2LXXX,XX*              *X*00332500
438,2/XXX*        *X863,2/2LXXX,XX*                                00332600
      SPACE      3                                                00332700
 5    TEXT      14              *X289,2/XXX*          *X314,2/2LXXX,X*00332800
X*         *X339,2/XXX*              *X364,2/2LXXX,XX*              00332900
 79   TEXT     *X389,2/XXX*         *X414,2/2LXXX,XX*              *X*00333000
439,2/XXX*        *X864,2/2LXXX,XX*                                00333100
      SPACE      3                                                00333200
 5    TEXT      15              *X290,2/XXX*          *X315,2/2LXXX,X*00333300
X*         *X340,2/XXX*              *X365,2/2LXXX,XX*              00333400
 79   TEXT     *X390,2/XXX*         *X415,2/2LXXX,XX*              *X*00333500
440,2/XXX*        *X865,2/2LXXX,XX*                                00333600
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        SPACE          3                                                            00333700
  3     TEXT           16                #X291,2/XXX#              #X316,2/2LXXX,X#00333800
X#              #X301,2/XXX#                 #X366,2/2LXXX,XX#                          00333900
  79    TEXT           #X391,2/XXX#                  #X016,2/2LXXX,XX#            #X#00334000
#01,2/XXX#                #X#66,2/2LXXX,XX#                                            00334100
        SPACE          3                                                              00334200
  3     TEXT           17                #X292,2/XXX#              #X317,2/2LXXX,X#00334300
X#              #X302,2/XXX#                 #X367,2/2LXXX,XX#                          00334400
  79    TEXT           #X392,2/XXX#                  #X017,2/2LXXX,XX#            #X#00334500
#02,2/XXX#                #X#67,2/2LXXX,XX#                                            00334600
        SPACE          3                                                              00334700
  3     TEXT           18                #X293,2/XXX#              #X318,2/2LXXX,X#00334800
X#              #X303,2/XXX#                 #X368,2/2LXXX,XX#                          00334900
  79    TEXT           #X393,2/XXX#                  #X019,2/2LXXX,XX#            #X#00335000
#03,2/XXX#                #X#69,2/2LXXX,XX#                                            00335100
        SPACE          3                                                              00335200
  3     TEXT           19                #X294,2/XXX#              #X319,2/2LXXX,X#00335300
X#              #X304,2/XXX#                 #X369,2/2LXXX,XX#                          00335400
  79    TEXT           #X394,2/XXX#                  #X019,2/2LXXX,XX#            #X#00335500
#04,2/XXX#                #X#69,2/2LXXX,XX#                                            00335600
        SPACE          3                                                              00335700
  3     TEXT           20                #X295,2/XXX#              #X320,2/2LXXX,X#00335800
X#              #X305,2/XXX#                 #X370,2/2LXXX,XX#                          00335900
  79    TEXT           #X395,2/XXX#                  #X020,2/2LXXX,XX#            #X#00336000
#05,2/XXX#                #X#70,2/2LXXX,XX#                                            00336100
        SPACE          3                                                              00336200
  3     TEXT           21                #X296,2/XXX#              #X321,2/2LXXX,X#00336300
X#              #X306,2/XXX#                 #X371,2/2LXXX,XX#                          00336400
  79    TEXT           #X396,2/XXX#                  #X021,2/2LXXX,XX#            #X#00336500
#06,2/XXX#                #X#71,2/2LXXX,XX#                                            00336600
        SPACE          3                                                              00336700
  3     TEXT           22                #X297,2/XXX#              #X322,2/2LXXX,X#00336800
X#              #X307,2/XXX#                 #X372,2/2LXXX,XX#                          00336900
  79    TEXT           #X397,2/XXX#                  #X022,2/2LXXX,XX#            #X#00337000
#07,2/XXX#                #X#72,2/2LXXX,XX#                                            00337100
        SPACE          3                                                              00337200
  3     TEXT           23                #X298,2/XXX#              #X323,2/2LXXX,X#00337300
X#              #X308,2/XXX#                 #X373,2/2LXXX,XX#                          00337400
  79    TEXT           #X398,2/XXX#                  #X023,2/2LXXX,XX#            #X#00337500
#08,2/XXX#                #X#73,2/2LXXX,XX#                                            00337600
        SPACE          3                                                              00337700
  3     TEXT           24                #X299,2/XXX#              #X324,2/2LXXX,X#00337800
X#              #X309,2/XXX#                 #X374,2/2LXXX,XX#                          00337900
  79    TEXT           #X399,2/XXX#                  #X024,2/2LXXX,XX#            #X#00338000
#09,2/XXX#                #X#74,2/2LXXX,XX#                                            00338100
        SPACE          1                                                              00338200
 16     TEXT           ...............................................................00338300
...........................................................                          00338400
*                                                                                     00338500
*                                                                                     00338600
  0     TEXT           MONTHLY                                                        00338700
```

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#       TEXT        TOTALB          #X300,2/XXX#                    #X325,2/2LXXX.XX#00339500
#       #X350,2/XXX#                        #X375,2/2LXXX.XX#                    00339800
79      TEXT        #X400,2/XXX#            #X325,2/2LXXX.XX#                #X#00339000
450,2/XXX#          #X075,2/2LXXX.XX#                                           00339100
        EJECT                                                                   00339200
        SPACE       3                                                           00339300
13      TEXT                        MONTHLY MAINTENANCE                         00339400
        SPACE       1                                                           00339500
13      TEXT                        INFORMATION                                 00339600
        SPACE       3                                                           00339700
#       TEXT        AIRCRAFT        NUMBER OF MAINT ACTIONS         MAINTENANC#00339800
E MAN HOURS         ELAPSED MAINT. DOWNTIME                                     00339900
#       TEXT        TAIL                                                        00340000
#       TEXT        NUMBER      UNSCHEDULED     SCHEDULED       UNSCHEDULE#00340100
D   SCHEDULED       UNSCHEDULED     SCHEDULED                                   00340200
        SPACE       3                                                           00340300
5       TEXT        1               #X476,2/XXX#                    #X501,2/XXX##00340400
#X551,2/2LXXX.XX#                #X526,2/2LXXX.XX#                              00340500
77      TEXT        #X601,2/1LXXX.X#           #X576,2/1LXXX.X#                 00340600
        SPACE       3                                                           00340700
5       TEXT        2               #X477,2/XXX#                    #X502,2/XXX##00340800
#X552,2/2LXXX.XX#                #X527,2/2LXXX.XX#                              00340900
77      TEXT        #X602,2/1LXXX.X#           #X577,2/1LXXX.X#                 00341000
        SPACE       3                                                           00341100
5       TEXT        3               #X478,2/XXX#                    #X503,2/XXX##00341200
#X553,2/2LXXX.XX#                #X528,2/2LXXX.XX#                              00341300
77      TEXT        #X603,2/1LXXX.X#           #X578,2/1LXXX.X#                 00341400
        SPACE       3                                                           00341500
5       TEXT        4               #X479,2/XXX#                    #X504,2/XXX##00341600
#X554,2/2LXXX.XX#                #X529,2/2LXXX.XX#                              00341700
77      TEXT        #X604,2/1LXXX.X#           #X579,2/1LXXX.X#                 00341800
        SPACE       3                                                           00341900
5       TEXT        5               #X480,2/XXX#                    #X505,2/XXX##00342000
#X555,2/2LXXX.XX#                #X530,2/2LXXX.XX#                              00342100
77      TEXT        #X605,2/1LXXX.X#           #X580,2/1LXXX.X#                 00342200
        SPACE       3                                                           00342300
5       TEXT        6               #X481,2/XXX#                    #X506,2/XXX##00342400
#X556,2/2LXXX.XX#                #X531,2/2LXXX.XX#                              00342500
77      TEXT        #X606,2/1LXXX.X#           #X581,2/1LXXX.X#                 00342600
        SPACE       3                                                           00342700
5       TEXT        7               #X482,2/XXX#                    #X507,2/XXX##00342800
#X557,2/2LXXX.XX#                #X532,2/2LXXX.XX#                              00342900
77      TEXT        #X607,2/1LXXX.X#           #X582,2/1LXXX.X#                 00343000
        SPACE       3                                                           00343100
5       TEXT        8               #X483,2/XXX#                    #X508,2/XXX##00343200
#X558,2/2LXXX.XX#                #X533,2/2LXXX.XX#                              00343300
77      TEXT        #X608,2/1LXXX.X#           #X583,2/1LXXX.X#                 00343400
        SPACE       3                                                           00343500
5       TEXT        9               #X484,2/XXX#                    #X509,2/XXX##00343600
#X559,2/2LXXX.XX#                #X534,2/2LXXX.XX#                              00343700
77      TEXT        #X609,2/1LXXX.X#           #X584,2/1LXXX.X#                 00343800
        SPACE       3                                                           00343900
5       TEXT        10              #X485,2/XXX#                    #X510,2/XXX##00344000
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      #X565,2/2LXXX.XX#                #X515,2/2LXXX.XX#                    00344100
77    TEXT       #X610,2/1LXXX.X#                  #X595,2/1LXXX.X#        00344200
      SPACE      3                                                          00344300
5     TEXT       11              #X495,2/XXX#                 #X511.2/XXX#  *00344400
      #X561,2/2LXXX.XX#                #X536,2/2LXXX.XX#                    00344500
77    TEXT       #X611,2/1LXXX.X#                  #X596,2/1LXXX.X#        00344600
      SPACE      3                                                          00344700
5     TEXT       12              #X497,2/XXX#                 #X512,2/XXX#  *00344800
      #X562,2/2LXXX.XX#                #X537,2/2LXXX.XX#                    00344900
77    TEXT       #X612,2/1LXXX.X#                  #X597,2/1LXXX.X#        00345000
      SPACE      3                                                          00345100
5     TEXT       13              #X498,2/XXX#                 #X513,2/XXX#  *00345200
      #X563,2/2LXXX.XX#                #X538,2/2LXXX.XX#                    00345300
77    TEXT       #X613,2/1LXXX.X#                  #X598,2/1LXXX.X#        00345400
      SPACE      3                                                          00345500
5     TEXT       14              #X499,2/XXX#                 #X514,2/XXX#  *00345600
      #X564,2/2LXXX.XX#                #X539,2/2LXXX.XX#                    00345700
77    TEXT       #X614,2/1LXXX.X#                  #X599,2/1LXXX.X#        00345800
      SPACE      3                                                          00345900
5     TEXT       15              #X490,2/XXX#                 #X515,2/XXX#  *00346000
      #X565,2/2LXXX.XX#                #X540,2/2LXXX.XX#                    00346100
77    TEXT       #X615,2/1LXXX.X#                  #X590,2/1LXXX.X#        00346200
      SPACE      3                                                          00346300
5     TEXT       16              #X491,2/XXX#                 #X516,2/XXX#  *00346400
      #X566,2/2LXXX.XX#                #X541,2/2LXXX.XX#                    00346500
77    TEXT       #X615,2/1LXXX.X#                  #X591,2/1LXXX.X#        00346600
      SPACE      3                                                          00346700
5     TEXT       17              #X492,2/XXX#                 #X517,2/XXX#  *00346800
      #X567,2/2LXXX.XX#                #X542,2/2LXXX.XX#                    00346900
77    TEXT       #X617,2/1LXXX.X#                  #X592,2/1LXXX.X#        00347000
      SPACE      3                                                          00347100
5     TEXT       17              #X493,2/XXX#                 #X518,2/XXX#  *00347200
      #X569,2/2LXXX.XX#                #X543,2/2LXXX.XX#                    00347300
77    TEXT       #X614,2/1LXXX.X#                  #X595,2/1LXXX.X#        00347400
      SPACE      3                                                          00347500
5     TEXT       19              #X494,2/XXX#                 #X519,2/XXX#  *00347600
      #X569,2/2LXXX.XX#                #X504,2/2LXXX.XX#                    00347700
77    TEXT       #X619,2/1LXXX.X#                  #X594,2/1LXXX.X#        00347800
      SPACE      3                                                          00347900
5     TEXT       20              #X495,2/XXX#                 #X520,2/XXX#  *00348000
      #X570,2/2LXXX.XX#                #X505,2/2LXXX.XX#                    00348100
77    TEXT       #X620,2/1LXXX.X#                  #X595,2/1LXXX.X#        00348200
      SPACE      3                                                          00348300
5     TEXT       21              #X496,2/XXX#                 #X521,2/XXX#  *00348400
      #X571,2/2LXXX.XX#                #X506,2/2LXXX.XX#                    00348500
77    TEXT       #X621,2/1LXXX.X#                  #X596,2/1LXXX.X#        00348600
      SPACE      3                                                          00348700
5     TEXT       22              #X497,2/XXX#                 #X522,2/XXX#  *00348800
      #X572,2/2LXXX.XX#                #X507,2/2LXXX.XX#                    00348900
77    TEXT       #X622,2/1LXXX.X#                  #X597,2/1LXXX.X#        00349000
      SPACE      2                                                          00349100
5     TEXT       23              #X499,2/XXX#                 #X523,2/XXX#  *00349200
      #X573,2/2LXXX.XX#                #X508,2/2LXXX.XX#                    00349300
77    TEXT       #X623,2/1LXXX.X#                  #X598,2/1LXXX.X#        00349400
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        SPACE       3                                                           00349500
5       TEXT        24              *X499,2/XXX*              *X524,2/XXX*       *00349600
*X574,2/2LXXX,XX*               *X549,2/2LXXX,XX*                                00349700
77      TEXT        *XA20,2/1LXXX,X*                *X599,2/1LXXX,X*             00349800
        SPACE       1                                                           00349900
15      TEXT        ............................................................*00350000
...............................................                                 00350100
8       TEXT        MONTHLY                                                      00350200
8       TEXT        TOTALS          *X500,2/XXX*              *X525,2/XXX*       *00350300
*X575,2/2LXXXX,XX*              *X550,2/2LXXXX,XX*                               00350400
77      TEXT        *X625,2/1LXXXX,X*              *X600,2/1LXXXX,X*             00350500
        EJECT                                                                   00350600
        SPACE       3                                                           00350700
19      TEXT                        MONTHLY AIRCRAFT                            00350800
        SPACE       1                                                           00350900
19      TEXT                        CHARACTERISTICS                             00351000
*                               .......................                         00351100
        SPACE       2                                                           00351200
8       TEXT        AIRCRAFT        DIRECT          NOT             NOT          *00351300
        AVAILABILITY                                                            00351400
8       TEXT        TAIL            MAINT. MAN      OPERATIONALLY   OPERATIONA   *00351500
LLY     ..................................................                      00351600
8       TEXT        NUMBER          HOURS PER       READY-          READY-       *00351700
JP TIME/        MISSIONS FLOWN/         MISSIONS COMP/                          00351800
8       TEXT                        FLIGHT HR.      MAINTENANCE     SUPPLY       *00351900
TOTAL TIME      MISSIONS CALLED         MISSIONS CALLED                         00352000
............................................................................   *00352100
...............................................                                 00352200
        SPACE       2                                                           00352300
5       TEXT        1               *X626,2/2LXX,XX*          *X651,2/1LXXXX,*   *00352400
X*              *X1401,2/1LXXX,X*       *X676,2/2LXX,XX*                         00352500
75      TEXT        *X701,2/2LXXX,XX*                *X726,2/2LXXX,XX*           00352600
        SPACE       2                                                           00352700
5       TEXT        2               *X627,2/2LXX,XX*          *X652,2/1LXXXX,*   *00352800
X*              *X1402,2/1LXXX,X*       *X677,2/2LXX,XX*                         00352900
75      TEXT        *X702,2/2LXXX,XX*                *X727,2/2LXXX,XX*           00353000
        SPACE       2                                                           00353100
5       TEXT        3               *X628,2/2LXX,XX*          *X653,2/1LXXXX,*   *00353200
X*              *X1403,2/1LXXX,X*       *X678,2/2LXX,XX*                         00353300
75      TEXT        *X703,2/2LXXX,XX*                *X728,2/2LXXX,XX*           00353400
        SPACE       2                                                           00353500
5       TEXT        4               *X629,2/2LXX,XX*          *X654,2/1LXXXX,*   *00353600
X*              *X1404,2/1LXXX,X*       *X679,2/2LXX,XX*                         00353700
75      TEXT        *X704,2/2LXXX,XX*                *X729,2/2LXXX,XX*           00353800
        SPACE       2                                                           00353900
5       TEXT        5               *X630,2/2LXX,XX*          *X655,2/1LXXXX,*   *00354000
X*              *X1405,2/1LXXX,X*       *X680,2/2LXX,XX*                         00354100
75      TEXT        *X705,2/2LXXX,XX*                *X730,2/2LXXX,XX*           00354200
        SPACE       2                                                           00354300
5       TEXT        6               *X631,2/2LXX,XX*          *X656,2/1LXXXX,*   *00354400
X*              *X1406,2/1LXXX,X*       *X681,2/2LXX,XX*                         00354500
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76    TEXT    #X704,2/2LXXX,XX0                  #X731,2/2LXXX,XX0    00354600
      SPACE   2                                                      00354700
5     TEXT    7          #X632,2/2LXX,XX0          #X657,2/1LXXXX,#00354800
X0            #X1407,2/1LXXX,X0      #X652,2/2LXX,XX0                 00354900
76    TEXT    #X707,2/2LXXX,XX0                  #X732,2/2LXXX,XX0    00355000
      SPACE   2                                                      00355100
5     TEXT    8          #X633,2/2LXX,XX0          #X658,2/1LXXXX,#00355200
X0            #X1408,2/1LXXX,X0      #X653,2/2LXX,XX0                 00355300
76    TEXT    #X708,2/2LXXX,XX0                  #X733,2/2LXXX,XX0    00355400
      SPACE   2                                                      00355500
5     TEXT    9          #X634,2/2LXX,XX0          #X659,2/1LXXXX,#00355600
X0            #X1409,2/1LXXX,X0      #X654,2/2LXX,XX0                 00355700
76    TEXT    #X709,2/2LXXX,XX0                  #X734,2/2LXXX,XX0    00355800
      SPACE   2                                                      00355900
5     TEXT    10         #X635,2/2LXX,XX0          #X660,2/1LXXXX,#00356000
X0            #X1410,2/1LXXX,X0      #X655,2/2LXX,XX0                 00356100
76    TEXT    #X710,2/2LXXX,XX0                  #X735,2/2LXXX,XX0    00356200
      SPACE   2                                                      00356300
5     TEXT    11         #X636,2/2LXX,XX0          #X661,2/1LXXXX,#00356400
X0            #X1411,2/1LXXX,X0      #X656,2/2LXX,XX0                 00356500
76    TEXT    #X711,2/2LXXX,XX0                  #X736,2/2LXXX,XX0    00356600
      SPACE   2                                                      00356700
5     TEXT    12         #X637,2/2LXX,XX0          #X662,2/1LXXXX,#00356800
X0            #X1412,2/1LXXX,X0      #X657,2/2LXX,XX0                 00356900
76    TEXT    #X712,2/2LXXX,XX0                  #X737,2/2LXXX,XX0    00357000
      SPACE   2                                                      00357100
5     TEXT    13         #X638,2/2LXX,XX0          #X663,2/1LXXXX,#00357200
X0            #X1413,2/1LXXX,X0      #X658,2/2LXX,XX0                 00357300
76    TEXT    #X713,2/2LXXX,XX0                  #X738,2/2LXXX,XX0    00357400
      SPACE   2                                                      00357500
5     TEXT    14         #X639,2/2LXX,XX0          #X664,2/1LXXXX,#00357600
X0            #X1414,2/1LXXX,X0      #X659,2/2LXX,XX0                 00357700
76    TEXT    #X714,2/2LXXX,XX0                  #X739,2/2LXXX,XX0    00357800
      SPACE   2                                                      00357900
5     TEXT    15         #X640,2/2LXX,XX0          #X665,2/1LXXXX,#00358000
X0            #X1415,2/1LXXX,X0      #X690,2/2LXX,XX0                 00358100
76    TEXT    #X715,2/2LXXX,XX0                  #X740,2/2LXXX,XX0    00358200
      SPACE   2                                                      00358300
5     TEXT    16         #X641,2/2LXX,XX0          #X666,2/1LXXXX,#00358400
X0            #X1416,2/1LXXX,X0      #X691,2/2LXX,XX0                 00358500
76    TEXT    #X716,2/2LXXX,XX0                  #X741,2/2LXXX,XX0    00358600
      SPACE   2                                                      00358700
5     TEXT    17         #X642,2/2LXX,XX0          #X667,2/1LXXXX,#00358800
X0            #X1417,2/1LXXX,X0      #X692,2/2LXX,XX0                 00358900
76    TEXT    #X717,2/2LXXX,XX0                  #X742,2/2LXXX,XX0    00359000
      SPACE   2                                                      00359100
5     TEXT    18         #X643,2/2LXX,XX0          #X668,2/1LXXXX,#00359200
X0            #X1418,2/1LXXX,X0      #X693,2/2LXX,XX0                 00359300
76    TEXT    #X718,2/2LXXX,XX0                  #X743,2/2LXXX,XX0    00359400
      SPACE   2                                                      00359500
5     TEXT    19         #X644,2/2LXX,XX0          #X669,2/1LXXXX,#00359600
X0            #X1419,2/1LXXX,X0      #X694,2/2LXX,XX0                 00359700
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76      TEXT        #X719,2/2LXXX.XX#                    #X744,2/2LXXX.XX#    00359800
        SPACE       2                                                        00359900
5       TEXT        20          #X695,2/2LXX.XX#         #X670,2/1LXXXX.#00360000
X#      #X1420,2/1LXXX.X#        #X695,2/2LXX.XX#                            00360100
76      TEXT        #X720,2/2LXXX.XX#                    #X745,2/2LXXX.XX#    00360200
        SPACE       2                                                        00360300
5       TEXT        21          #X696,2/2LXX.XX#         #X671,2/1LXXXX.#00360400
X#      #X1421,2/1LXXX.X#        #X696,2/2LXX.XX#                            00360500
76      TEXT        #X721,2/2LXXX.XX#                    #X746,2/2LXXX.XX#    00360600
        SPACE       2                                                        00360700
5       TEXT        22          #X697,2/2LXX.XX#         #X672,2/1LXXXX.#00360800
X#      #X1422,2/1LXXX.X#        #X697,2/2LXX.XX#                            00360900
76      TEXT        #X722,2/2LXXX.XX#                    #X747,2/2LXXX.XX#    00361000
        SPACE       2                                                        00361100
5       TEXT        23          #X698,2/2LXX.XX#         #X673,2/1LXXXX.#00361200
X#      #X1423,2/1LXXX.X#        #X698,2/2LXX.XX#                            00361300
76      TEXT        #X723,2/2LXXX.XX#                    #X748,2/2LXXX.XX#    00361400
        SPACE       2                                                        00361500
5       TEXT        24          #X699,2/2LXX.XX#         #X674,2/1LXXXX.#00361600
X#      #X1424,2/1LXXX.X#        #X699,2/2LXX.XX#                            00361700
76      TEXT        #X724,2/2LXXX.XX#                    #X749,2/2LXXX.XX#    00361800
16      TEXT        .........................................................#00361900
........................................................ ...............     00362000
8       TEXT        MONTHLY                                                   00362100
8       TEXT        TOTALS      #X650,2/2LXX.XX#         #X675,2/1LXXXX#00362200
.X#     #X1425,2/1LXXXX.X#       #X700,2/2LXX.XX#                            00362300
77      TEXT        #X725,2/2LXX.XX#                     #X750,2/2LXX.XX#     00362400
        EJECT                                                                00362500
        SPACE       3                                                        00362600
CC      TEXT        MONTHLY PLATOON STATISTICS                               00362700
        SPACE       3                                                        00362800
19      TEXT        TOTAL FLYING HOURS DURING THE MONTH     #X183,2/1LX#00362900
XX.X#                                                                       00363000
        SPACE       2                                                        00363100
19      TEXT        FLYING HOURS-COMPLETED MISSIONS          #X275,2/1LX#00363200
XX.X#                                                                       00363300
        SPACE       1                                                        00363400
19      TEXT        FLYING HOURS-ABORTED MISSIONS          #X1675,2/1L#00363500
XXX.X#                                                                      00363600
        SPACE       1                                                        00363700
19      TEXT        FLYING HOURS-TEST HOPS                   #X800,2/1LX#00363800
XX.X#                                                                       00363900
        SPACE       3                                                        00364000
19      TEXT        THE SERVICE PLATOON PERFORMED #X176,2/XXX# ON AIRCRAF#00364100
T REPAIRS THIS MONTH.                                                       00364200
        SPACE       2                                                        00364300
19      TEXT        THE SERVICE PLATOON ALSO REMOVED AND REPLACED #X175,2#00364400
/XXX# PARTS ON THE AIRCRAFT.                                                00364500
        SPACE       2                                                        00364600
19      TEXT        #X177,2/XXX# OF THE PARTS REMOVED AND REPLACED WERE R#00364700
EPAIRED AT THE ORGANIZATIONAL LEVEL.                                        00364800
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         SPACE          2                                                          00344900
 .19     TEXT           #X179,2/XXX# WERE REPAIRED AT THE DIRECT SUPPORT LEVE#00365000
L.
         SPACE          2                                                          00345100
 .19     TEXT           #X179,2/XXX# OF THE PARTS WERE REPAIRED AT THE SEVERA#00365300
L SUPPORT LEVEL.
         SPACE          2                                                          00345400
 .19     TEXT           THERE WERE #X180,2/XXX# PARTS RETURNED TO THE DEPOT I#00365600
N THE NRTS CATEGORY.
         SPACE          2                                                          00345700
 .19     TEXT           THERE WERE ALSO #X181,2/XXX# PARTS THAT WERE CONDEMNE#00365900
D.
         SPACE          2                                                          00366100
 .15     TEXT           #X182,2/XXX# PARTS WERE DETERMINED TO BE FALSE ALARMS      00366200
         OUTPUT                                                                    00366300
         END                                                                       00366400
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LIST OF SYMBOLS AND ABBREVIATIONS

A/C   Aircraft

ATC   Advanced Technology Component

CONUS   Continental United States

CPU   Central Processing Unit

EMT   Elapsed Maintenance Time

F/H   Flight Hour

FAIL RATE   Failure Rate

FIRM   Flight Inspection Requirements Minimum

GPSS   General Purpose System Simulation

GSE   Ground Support Equipment

HLH   Heavy Lift Helicopter

I.O.M.   Index of Merit

MA   Maintenance Action

MAINT. CONC. Maintenance Concept

MALF/FH   Malfunctions per Flight Hour

MEA   Maintenance Engineering Analysis

MMH   Maintenance Man-hour

MMH/FH   Maintenance Man-hour per Flight Hour

MTBMA   Mean Time Between Maintenance Actions

MTTR   Mean Time to Repair

NORM   Not Operationally Ready - Maintenance

NORS   Not Operationally Ready - Supply

NRTS   Not Repairable This Station

O&M   Operations and Maintenance

PMD   Preventive Maintenance Daily

PMI	Preventive Maintenance Intermediate
PMP	Preventive Maintenance Periodic
PPI	Phased Periodic Inspection
Q	Queue
R&M	Reliability and Maintainability
S	Standard deviation of a normal distribution
TBO	Time Between Overhaul
TOE	Table of Organization and Equipment
UTIL	Utilization
WUC	Work Unit Code
$\overline{X}$	Mean of a normal distribution